

**THE
RAILWAY GAZETTE**

A Journal of Management, Engineering and Operation
INCORPORATING

Railway Engineer • TRANSPORT • The Railway News

The Railway Times • Herapath's
Railway Journal • RAILWAY RECORD.

RAILWAYS • ILLUSTRATED • ESTABLISHED 1833 • THE RAILWAY OFFICIAL MAGAZINE

33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1.
Telephone: WHItEhall 9233 (12 lines) Telegrams: "Trazette Parl, London"

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Annually £4 10s. by post. Single copies, Two shillings.
Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Vol. 97] FRIDAY, SEPTEMBER 19, 1952 [No. 12

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Keeping Transport out of Politics

SINCE the appearance of the White Paper on Transport and the acute political controversy it provoked when debated in the House of Commons, one of the major anxieties of railwaymen has been the prospect not merely of one upheaval in organisation, but of a succession of them with every change of Government. This is a feeling common to all with the interests of railway transport at heart, without regard to individual political views or personal ideas of what form a future organisation should take. It was given expression by Mr. John Elliot, Chairman of the Railway Executive, when presiding at the opening by the Minister of Transport last Wednesday of the British Railways freight rolling stock exhibition at Battersea. His speech, reported on another page, recalled that many railwaymen now serving had been through two major reorganisations, one in 1923 and one in 1948. Railway officers and their staffs were renowned for their loyalty, self-discipline, and hard work, but major changes every decade or less were bad and unsettling. Mr. Elliot reminded his audience that most railway problems were not political at all, but technical, and, above all, commercial. Railwaymen had a right to ask for a degree of permanence in organisation and freedom from political controversy so that they could concentrate on their essential task of serving the public. This point of view deserves to be voiced on every appropriate occasion, or it will be lost sight of in

the controversy that has unavoidably followed the political act of nationalisation in this country. Maximum insistence was placed on political considerations in the propaganda for railway nationalisation, and the matter of efficiency in transport services tended to be brought in almost apologetically as being something on a less idealised plane. The major practical difficulties of the railways in the matter of antiquated charging enactments were left undisturbed, and Mr. Elliot expressed the hope that this time the opportunity would be taken to remove them. With these gone, and immunity from interference assured, he felt that the railways would have been given a charter of freedom and enterprise.

Rolling Stock and Goods Handling Exhibition

EVIDENCE of the progress made by British Railways in the production of standard wagon types was given at the freight rolling stock exhibition held at Battersea Wharf on Wednesday and Thursday of this week, where 20 of the 65 types produced so far were on show. It is intended to replace the 480 different types of wagon in production at nationalisation by not more than some 150. Recent developments among coal, gas and electricity undertakings have justified an increase in the capacity of mineral wagons and British Railways have decided that the most economical wagon for coal traffic will be 24½ tons capacity, with a loaded weight of 35 tons. The size of wagons for general merchandise will continue to be 12 tons capacity for covered vans and 13 tons for open wagons. Combined with the rolling stock exhibition was an ably run demonstration of mechanical appliances designed to expedite handling at goods stations. Modernisation schemes have been completed or begun at 100 goods stations since nationalisation, and at the majority of these mechanical devices of the types demonstrated are in use. Presiding at the opening of the Exhibition by the Minister of Transport, Mr. John Elliot, Chairman, Railway Executive, said in the course of the speech to which we refer in the previous note, that the number of fast freight trains fitted with continuous brakes was now 44,000 a year, compared with 27,000 in 1938; with the approval of the B.T.C., the long-term policy of fitting all freight wagons with the continuous brake had been agreed.

East African Railways' Achievement

ALL previous records in goods and passenger traffic were broken in 1951 by the East African Railways & Harbours, a remarkable feat in view of the limited equipment available for handling rapidly increasing traffic. The annual report for 1951 shows that the ton-mileage in 1951 was 130 per cent. higher than in 1939, and that total tonnage handled rose 114 per cent. between 1939 and 1951; the import tonnage through the port of Mombasa last year was some 50 per cent. higher than for the peak war traffic year, 1941; passenger traffic rose 343 per cent. in 1939-51. This rapid increase, which has resulted in some difficulties in handling through lack of railway and port equipment, notably in the port of Mombasa, could not be foreseen; in 1945, it was reasonable to expect a falling off in abnormal wartime traffic; and none could predict the phenomenal postwar expansion of the East African economy. The E.A.R. & H. Administration has made, and is making, strenuous efforts to increase the capacity of the railway, largely in ordering locomotives and other equipment from the United Kingdom. Some of this has been delivered, but the total cost of orders now with the manufacturers for new locomotives and rolling stock is £18,600,000. A further difficulty has been the financing of railway improvements, with the constant increase in prices and difficulty in raising money on advantageous terms.

British Exports to Canada

THE possibilities of Canada as a growing market for British manufacturers of capital goods are stressed in the August issue of the Treasury *Monthly Bulletin for Industry*. Canada, it is pointed out, has maintained a

high rate of investment since the war. In 1946-50, her industrial plant and equipment were increased by 40 per cent. By 1948, more than half her total net output was accounted for by secondary industries. The population has risen by nearly one-quarter since 1939, and total production has doubled, as has the volume of imports. Whilst the United Kingdom cannot match U.S.A. investment in Canada, the *Bulletin* points out that "there are powerful Canadian exporting interests which see in an increase of British exports to Canada the only hope of reviving the prewar volume of sales to Britain." How far British exporters of railway material can expect orders from Canada is problematical; but the important orders for rolling stock and signalling equipment for the Toronto subway which have been placed with British firms within the past few months may well be followed by other orders for railway equipment from Canada.

Irish Transport Problems

PROFESSOR C. F. CARTER, who occupies the chair of Applied Economics at Queen's University, Belfast, in a paper read to the Economic Section of the British Association, emphasised the significance of the experience of public ownership represented by the Ulster Transport Authority, and pointed out the economic difficulties in which Irish railways must function. The real trouble with transport in Ireland, he stated, is the lack of a growing population and a thriving industry, and if the transport system were built up anew, it probably would be without railways. Apart from undue pessimism as to the future of industry in both Northern Ireland and the Republic, Professor Carter probably underestimates the potentialities of railways in Ireland, even although there are only the two large cities, Dublin and Belfast, with the Border to dislocate traffic. He suggests the use of light diesel passenger and freight units, on branch lines in particular. This is a direction in which the railways, both north and south of the Border, have already made successful efforts.

Overseas Railway Traffics

DURING the fortnight ended September 5, Antofagasta (Chili) & Bolivia traffics were up by £80,000 at £304,150, as compared with the equivalent period of 1951, and during the second week were considerably higher than in many recent weeks. Receipts for the week ended September 5 amounted to £163,700 and on the aggregate were £1,200,380 higher at £5,445,640. Gold Coast traffics made a small advance during July, but did not continue to advance at the same rate as in previous months of the current financial year. The total increase for the 17 weeks to July 31 was £119,405, at £1,179,541; only £5,354 of this improvement was contributed by traffics for July, which amounted to £260,241. Receipts of the Victorian Railways for May showed advances by railways, road motors and electric street railways. The combined increase amounted to £229,476 at £2,183,278. Taltal traffics for August were \$862,000 higher and aggregate receipts since July 1 were up by \$1,332,000 at \$5,187,000.

Hydraulic Engineering Firm's Centenary

THIS week the firm of Glenfield & Kennedy Limited, of Kilmarnock, is commemorating one hundred years of activity, dating from the formation of the Kennedy Patent Water Meter Syndicate in 1852. Manufacture of the sluice valves for which the company is so well known in many branches of engineering arose almost by chance out of the water meter business in 1867, and later in the century a variety of Glenfield & Kennedy products appeared on railway premises, such as locomotive water cranes and hydraulic capstans. The development of electric power reduced the applications of the hydraulic machinery in which the company had specialised, but in recent years it has applied its plant and experience to the production of hydraulic presses for munitions work. A centenary publication, "The First Hundred Years," has been issued to show the whole scope of the company's products, among which large hydro-electric valves for use in schemes of

electricity generation by water power are likely to assume an ever growing importance in the second century on which the company has now embarked. Two illustrations in the book recall that Glenfield & Kennedy were responsible for watertight sliding and hinged gates, one of them of 23 ft. 6 in. span, for protection of tube and other railway tunnels from flooding during the 1939-45 war.

Main-Line Passenger Traffic in France

INTRODUCTION of the summer passenger service in May, rather than that of the winter service in October, is the occasion for the major changes in European passenger timetables. Completion of the Paris-Lyons electrification this summer, however, has enabled the French National Railways to bring into effect, from October 5, the accelerations in the South-Eastern Region between Paris, Lyons, the Mediterranean, and Italy, referred to elsewhere in this issue. This arouses hopes of comparable improvements next summer in South-Western Region main-line electric services, more particularly between Paris, Bordeaux, and the Spanish frontier, if additional motive power is available. A feature of the winter timetable is the increased use of fast railcars as feeders to main-line expresses, which has made possible, for instance, a morning journey from Geneva to Paris. The placing in service in the Eastern Region of sets of Budd type stainless-steel stock gives additional seating capacity in some Paris-Strasbourg expresses hitherto worked with pneumatic-tyre sets. The retiming of the "Golden Arrow" to connect with the afternoon service from London via Folkestone-Calais, already has been the subject of editorial comment.

Increased U.S.A. Sleeping Car Charges

ON August 1 the minimum charge for the use of a lower berth in a standard Pullman sleeper of the older sectional type on the U.S.A. railways was raised from \$4.05 to \$5.00, and in a tourist sleeper from \$3.20 to \$3.95, with proportionate increases in the minimum supplements for upper berths, roomettes, single and double bedrooms, drawing rooms, and other descriptions of Pullman sleeping accommodation. Actually this charge will affect shorter journeys only, from 200 to 400 miles or so, as over the longer distances the previous supplements already were higher than the new minima. Nevertheless it is expected that this adjustment will increase the annual revenue of the Pullman Company by some \$4,300,000, and so will go some way towards reducing the present annual deficit, which exceeds \$15 million. The Pullman Company originally intended to make these changes in its rates on January 1, 1952, but due to a petition by the Secretary of the Air Force, Department of Defence, the Interstate Commerce Commission issued an order suspending the increases for seven months. This order has now been "vacated."

An Unobtrusive Viaduct

MANY railway viaducts contribute to rather than mar the attractiveness of the landscape or the architectural features of towns, especially if they are designed to blend with the surroundings. But it cannot often happen that there is a demand for one that will not obstruct a marine view from public gardens, a main road, and houses, as was the case at Barmouth. There, Western Region engineers have contrived an unobtrusive and easily-maintained structure embodying modern practice—involving pre-stressed concrete multiple beams clamped together by transverse post-tensioning—as described in an article on page 321. Hard as it is to forecast the reaction of authorities on aesthetics, it can safely be said that this viaduct is a tidier element in the view than its timber predecessor. But concrete structures are subjected to critical scrutiny these days, as witness the recent controversy over concrete lamp standards, and the fact that 52 patterns for posts in various materials have just been referred back to the manufacturers by the Council of Industrial Design with suggestions for improvements. Details of the work at Barmouth are interesting and are again a reminder that British Railways continue to keep abreast of the times.

Fuel Economy in Transport

EVIDENCE supplied by the Railway Executive to the Ridley Committee on National Policy for the Use of Fuel and Power Resources, whose report* was published last week, estimated annual direct consumption of coal on the railways in the period 1956-63 at 13.7 million tons. As this represents only a small reduction on the present figure of some 14 million tons, and the committee was advised that there is little prospect of reaching a higher efficiency in steam locomotives with any fuel than the 2 to 9 per cent. now obtaining, the report devotes some attention to alternative forms of motive power. The committee considers that the plans for 500 additional diesel shunting locomotives and for further electrification of which it was advised do not go far enough from the fuel point of view, but it acknowledges the obstacles of restrictions on capital investment and the strategic implications of reliance on imported fuel oil. Importance is attached in the latter respect to the development of gas turbine locomotives using pulverised fuel, which, if successful, should give an operating efficiency at least twice that of the steam engine. The full-load efficiency quoted for the coal-fired gas turbine locomotive ordered from C. A. Parsons Limited and the North British Locomotive Co. Ltd. by the Ministry of Fuel & Power is, in fact, expected to be 19 per cent., as reported in our July 25 issue.

Saying that "the fuel resources of the country should not be subject to waste on the present scale in rail transport," the committee calls on the Railway Executive to allow great weight in its immediate and longer term investment plans to the need to make a substantial improvement in fuel efficiency, and to accelerate trials of alternative forms of motive power for main-line operation. It recognises that poor quality coal supplied for locomotives leads to great loss in efficiency and urges that every effort should be made to provide the railways with suitable coal. Electricity is one alternative suggested where traffic conditions are suitable, and a memorandum submitted to the committee by the British Electricity Authority covers this point.

An impressive case for main-line electrification is seen in the 10 million tons of coal that could be saved thereby, the consumption after electrification being calculated to be about one-third of that used by steam locomotives for equivalent traffic, and of far lower quality. Full benefit from such conversion would only be obtained, however, if demand for industrial and traction purposes were accompanied by a balancing development of the domestic load. The B.E.A. memorandum says that this balanced development in the past has been responsible for the substantial improvement in load factor. Without such balanced development the efficiency of the utilisation of the electricity supply system would be impaired, and consequently the charges for power supplies would tend to increase.

The committee has referred to scope for raising the fuel efficiency of the transport system in a more limited field than by wholesale changeover of motive power. An appendix tabulating fuel consumption for passenger and freight services by road and rail compares the two in terms of British Thermal Units used:—

Railways	B.Th.U. per vehicle-mile	
	Steam	Electric
Average passenger service	10.8	—
Express passenger	4.4	2.8
Branch line passenger	19.6	—
Suburban electric	—	4.5
London Transport	—	4.9
Average freight service	2.6	—
Fitted freight	1.7	—
Slow freight	5.9	—
Roads	B.Th.U. per vehicle-mile	
	Petrol and diesel	
Average for all bus and coach services of L.T.E., Tilling, and Scottish groups	1.2	—
L.T.E. double-deck bus on Central services	1.3	—
Tilling single-deck coach	1.0	—
Approximate average for all Road Haulage Executive petrol and diesel vehicles	1.2	—

A comparison is made also of fuel consumption per passenger seat-mile by rail and road passenger services. Here the railway figures in B.Th.U. are 0.21 (average) 0.16 (express passenger), and 0.48 (branch line), all these being for steam haulage. Corresponding road figures are 0.025 (all L.T.E., Tilling, and Scottish group bus and coach services, petrol and diesel), 0.036 (London Transport double-deck bus, diesel, on Central Services), and 0.021 (Tilling single-deck coach, diesel). Attention is drawn to the higher ratio of dead weight to pay load in railway stock, the passenger pay load when full being about 7½ per cent. of the total weight of a railway carriage, but 25 per cent. or more of that of a road passenger vehicle. While recognising that transport is subject to many problems outside its competence to assess, the committee sees the prospect of substantial fuel saving through the substitution of road passenger vehicles or of diesel railcars for steam trains on some branch line services.

British Carriers

CONSTRUCTIVE criticism of the Transport Bill continues amid the more picturesque assertions of the political campaign. A concept of transport now claiming attention envisages decentralised managements responsible for rail, road, and water services in specified areas. This idea was developed by Mr. Norman Crump in an article in *The Sunday Times* of September 14 suggesting the creation of "a transport system that would work." He would abolish the present Executives in favour of controlling bodies whose comprehensive transport functions, he suggests, would justify reviving for them the old English name of "carriers," so that Eastern Carriers, Western Carriers, and so on would replace the present regional titles. Each would control railways, canals, docks, and road transport over distances of more than 50 miles in its area.

The area chief general managers would be responsible to area boards composed of part-time directors representative of the life of their areas. These boards would have to be appointed by the British Transport Commission as sole shareholder, but the Commission would be enjoined to take advice from the areas and to intervene as little as possible, modelling itself, in fact, on the wartime Railway Executive Committee.

The commercial managers of each area would be responsible for selling transport in all forms at their command, but in respect of road transport would be instructed to employ privately-owned firms for short-distance work as far as possible, this section of the road haulage industry being returned to private hands and given an operating range of, perhaps, 50 miles, without the limitation that this distance must be a radius based on the firm's geographical location. In this way it is suggested that the essential liaison between the public and private sections of the industry would be established. There should be no limitation on the existing right to take out a "C" licence, and no levy. In such measures Mr. Crump sees the best chance of making maximum use of transport facilities as they exist today, and as they must continue in economic circumstances that preclude radical change or extension. To promote competition between areas by providing a measure of their individual efficiency, he thinks there is something to be said for reviving the Railway Clearing House.

Under these proposals the areas could carry forward the work of integrating rail and road facilities where this is advantageous. The suggested very full autonomy for the engineers of each area might at first sight seem likely to impede standardisation, which Mr. Crump thinks can become the negation of progress if carried too far. On the other hand there is no suggestion that areas should be watertight compartments, and normal contacts between engineers and operating departments should suffice to restrain the multiplication of types of equipment for its own sake. Standardisation could come by mutual agreement in railway work as it has in other branches of industry, as well as by being imposed from a central authority.

* Cmd. 8647. H.M.S.O. Price 6s. 6d. net

New Railways in Canada

MANY decades have passed since new railway construction has been undertaken on such a scale as that now proceeding in North America. It is chiefly Canada that is affected, and the new lines are reaching out into the sparsely populated regions of Northern Canada in search of extensive mineral resources hitherto untapped. These railway projects once again provide proof that there can be no effective substitute for the railway in the carriage of minerals in bulk. They are also of interest in that in practically every case they are to be worked by diesel power, despite extremely low winter temperatures in the areas concerned; and certain of them are of note in view of the exceptionally high transport capacity planned.

This applies particularly to the Quebec, North Shore & Labrador, a 360-mile line described in our September 5 issue. The plan is to make the 360-mile run with loaded trains in 14 hr., and the return journey with empty wagons in 12 hr. It is hoped, with a total of 22 passing sidings, centralised traffic control, and radio communication, to be able to work up to 36 ore trains a day over this route, which is being laid with rails weighing no less than 132 lb. per yd., in view of the weight of traffic which will pass over the line, and which may mount eventually to 20,000,000 tons a year.

In the northern part of Manitoba, 550 miles north of Winnipeg, the Canadian National Railways are engaged in laying a line 155 miles long, continuing the Sherridon branch (which itself branches at The Pas from the isolated line to Churchill on Hudson Bay). The new line is to serve one of the world's richest strikes of nickel ore, at Lynn Lake, discovered in 1941: part of the construction will be difficult, owing to the necessity for crossing a series of ridges and also the Churchill River, which will require a bridge with two 200-ft. and one 155-ft. truss spans. The estimated cost of this railway is \$15 million, of which the Canadian Government is finding \$10 million, and the C.N.R. the remainder; completion is hoped for in October, 1953. The Lynn Lake branch is being built to minimum branch standards, for tri-weekly service is expected to be sufficient to handle the traffic.

Another Canadian National branch under construction is near the western seaboard, in the north of British Columbia, diverging from the lengthy Prince Rupert branch at Terrace, and extending southwards for 43 miles to the great aluminium works now in course of construction at Kitimat, at the head of the Douglas Channel from the Pacific. We referred to this project in our June 29, 1951 issue. The ore, initially about 175,000 tons a year, will arrive by sea, but the railway is expected to carry from the works one-third of the 91,000 tons of aluminium to be produced annually, and to the works, coke, coal, and other requisites to a total, in both directions, estimated at an average of 113,500 tons annually in the first five years from opening, and 168,000 tons annually thereafter. Completion is expected in 1954.

In the same area the Pacific Great Eastern, now taken over by the Government of British Columbia, is expecting later this year to open its 85-mile extension northwards from Quesnel to a junction with the C.N.R. Prince Rupert branch at Prince George (see our March 24, 1950, issue). Of the cost of \$14 million, the Canadian Government has paid a subsidy of \$1,230,000, and British Columbia has found the remainder. A far more important project, though at present tentative only, is a further extension from Prince George to the north to reach the Dawson Creek area, with its rich mineral and agricultural possibilities. Lastly, there is the newly-opened Romaine River Railway, 27 miles long, built to bring ilmenite ore—the source of titanium—down from the vast Lac Tio deposits to the Gulf of St. Lawrence, already carrying over 400,000 tons of ore annually.

The projects already mentioned comprise a total of 670 miles of new line either being pushed forward with all speed, or approaching completion, or, as the last-mentioned example, just opened. Across the United States border numerous short lines are being built to serve new mines and manufacturing plants; and considerable stretches of

new track have been built recently to smooth out curvature or eliminate gradients on important main lines, or to lift railways above areas of country submerged in some of the great water control schemes. There is also the bold project of the Chicago, Burlington & Quincy Railroad in making its new main line access to Kansas City, partly by new construction and partly by the reconstruction of existing lines, now well in progress.

Winter Train Services, Eastern and North Eastern Regions

THE most outstanding improvement by far in the Eastern Region winter train service is the new express at 8 a.m. from Kings Cross to Leeds and Bradford, which began running on Monday last, and the corresponding return train. This new service is in response to requests made by the Associated Chambers of Commerce and other bodies for facilities for London business men and others to reach cities in the industrial North in time for business before lunch, to have the afternoon and early evening for business, and to be back in London at a not unreasonably late hour. The 8 a.m. therefore reaches Leeds at 11.31 and Bradford at 11.55 a.m.; it returns from Bradford at 6.10 p.m. and Leeds at 6.33 p.m., reaching Kings Cross at 10.5 p.m. Stops are made in both directions at Hitchin, for the convenience of passengers in the Welwyn Garden City, Stevenage, Hitchin, and Letchworth areas (for whom excellent connections are provided), and at Doncaster. The distance of 124.1 miles from Hitchin to Doncaster is booked to be covered in 127 min., and as 7 min. of this time is a recovery margin, the booking requires a net start-to-stop average of 62.0 m.p.h., and is the fastest schedule over this main line since the war. In the reverse direction the same distance is booked to be covered in 127½ min. (123½ min. less recovery margin). It is to be hoped that the possibility may be considered of a fast connection over the 32 miles from Doncaster, reached by the 8 a.m. down at 10.48 a.m., to York, to connect with the 11.32 a.m. from there (perhaps slightly retarded for the purpose) to Darlington and Newcastle. Such a connection, reaching Newcastle more than 2 hr. ahead of the 10 a.m. "Flying Scotsman," would give a businessman a full 3 hr. in Newcastle, Middlesbrough, or Stockton for an appointment, with return to London by the "Heart of Midlothian," reaching Kings Cross at 9.55 p.m.

With all the other expresses into and out of Kings Cross, recovery margins on both sides of Peterborough have been reimposed, so that nearly every long-distance express is slowed down by 5 min. or more. This is the more surprising in view of the fine performances that Eastern Region enginemasters have been putting up during the past summer. For example, net times of less than 6 hr. 40 min. have been made by the non-stop "Capitals Limited" between London and Edinburgh. In the circumstances it is astonishing that the "Flying Scotsman" is slowed for the winter by no less than 14 min. from Kings Cross to Newcastle, and 15 min. in the reverse direction, though a little time is recovered between Berwick and Edinburgh, so that the overall time, 7 hr. 50 min., is the same as last winter. The "Queen of Scots," which often has been making the London-Leeds run in net times of 190-195 min., is slowed to 3½ hr. down and 3 hr. 29 min. up over this section.

Between York and Darlington there is a similar deceleration, and all the mile-a-minute schedules between Darlington and York have disappeared except for two up trains, one of them the "North Briton," booked over the 44.1 miles in 44 min. North of Newcastle, however, almost the entire service is accelerated, though this is due mainly to the reductions in the Scottish Region times between Berwick and Edinburgh. The "North Briton" and the northbound and southbound "Queen of Scots" have their times cut from 137 to 132 min. for the 124.4 miles between Newcastle and Edinburgh; the southbound "Heart of Midlothian" (2 p.m. from Edinburgh) is now allowed only 63 min. (a very exacting schedule) for the 57.5 miles from Edinburgh to Berwick, and reaches Newcastle at 4.21 instead of 4.35 p.m.; arrival at Kings Cross is 9.55 p.m., as last winter, instead

of the summer 10.5 p.m., so that this train, with five intermediate stops, takes only 5 min. more to London than the "Flying Scotsman," with two stops only.

The 1 a.m. sleeping car express from Kings Cross to Edinburgh starts at 12.55 a.m., and the 3.30 p.m. to Newcastle at 3.10 p.m. The 8 a.m. (last winter 8.30 a.m.) semi-fast from Kings Cross to Hull starts at 8.25 a.m., and calls additionally at Huntingdon. The Norwegian boat portions for the Fred Olsen line sailings on Tuesdays and Saturdays this winter will be attached to the 9.18 a.m. "White Rose" from Kings Cross, which necessitates the running of a special connecting train from Doncaster to Tyne Commission Quay, Newcastle.

The Great Eastern section has added to the brilliance of its recent achievements by introducing a 2 hr. timing over the 115 miles from Liverpool Street to Norwich. The train selected is the 3.30 p.m. down "Broadman," allowed 73 min. for the 68.7 miles to Ipswich, and 45 min. for the 46.3 miles from there to Norwich. The latter start-to-stop booking, at 61.7 m.p.h., is now the fastest in Great Britain, and includes a pass-to-pass booking (Haughley to Tivetshall, 17.6 miles in 14½ min.) at 72.8 m.p.h. The up "Broadman" also is accelerated (by 7 min.); leaving Norwich at 7.45 a.m., it is due in Liverpool Street at 10 a.m. (2½ hr.) with stops at Diss, Stowmarket, and Ipswich, and a 75 min. run from there to London. As the 12.36 p.m. from Liverpool Street to Clacton is withdrawn for the winter, the 12.30 p.m. Norwich express makes an additional call at Colchester, in the smart time of 58 min. from London, and takes 2½ hr. to Norwich. There is an additional train on Sunday evenings from Liverpool Street at 11 p.m. to Cambridge, Ely, and Kings Lynn.

On the Great Central Section, the 10 a.m. semi-fast from Marylebone to Manchester reaches Sheffield at 1.58 instead of 2.4 p.m. The through Newcastle-Bournemouth restaurant car service, via Sheffield, Nottingham, Leicester, and Banbury, runs daily instead of on Fridays and Saturdays only (as last winter); the through Friday and Saturday Swindon-York service of last winter is continued, but without refreshment car, and running between Banbury and York only (12.58 p.m. from Banbury and 12.20 p.m. from York).

Sleeper Preservation in Australia

WE referred in an editorial article in our August 15 issue to two papers of railway interest presented for discussion at the 1952 Convention of the British Wood Preserving Association. One was summarised in that editorial, and the other, presented by Mr. N. Tamblin, Division of Forest Products, C.S.I.R.O., Australia, was entitled "Problems of Rail Sleeper Preservation in Australia." At the outset this paper makes it clear that the sleeper problem in that country is peculiar to it, but there are many points discussed that may interest engineers, especially those working in dry, hot climates.

Hitherto it has been possible to obtain locally and at low cost sleepers cut from timbers of high natural durability without treatment and possessing good mechanical properties, mainly of the eucalypt species. Some 70,000,000 of them are in service on railway systems; their maintenance should involve replacement at the rate of about 3,500,000 a year. Actually a service life of from 15 to 20 years has been given, depending on conditions at site and species, mainly ironbarks, boxes, red river gum, and jarrah. Because of this natural long life, treatment has generally been considered unnecessary or of doubtful economic value. Certain inferior eucalypts such as karri were treated by the open-tank fluorised system, but, though this was cheap and its cost was amply repaid by more than doubling the life of the sleepers, it was not considered economical because untreated and more durable species were still freely available and gave longer life at a cost representing a lower annual charge.

During the last decade the situation has changed substantially, and the supply of the better species in readily-accessible stands is now insufficient to meet the demand, and the quality supplied is lower than in the past. Mean-

while, traffic has become heavier and track inspection more critical, and without treatment these poorer-quality sleepers will have to be replaced much earlier than has been the practice in the past.

Unfortunately, eucalypts have a narrow sapwood and sleepers are cut almost entirely from their heartwood, which is difficult to treat with preservatives. Most species used for sleepers are slow-drying and of high shrinkage, thus being liable to severe splitting and checking during the drying period. Many species are also fissile, accentuating this defect. Mechanical failure is, in fact, responsible for 90 per cent. of all renewals, except in the high-rainfall tropical and sub-tropical northern coastal areas, where decay is of greater importance and will increase as less-durable species are used. The main problem throughout the Dominion is, however, the preservation of eucalypt sleepers to increase their mechanical life to the maximum compatible with economy.

The earlier treatment with fluorised salts of karri and also later of *Pinus Radiata* sleepers, though improving resistance to decay, did not appreciably increase their mechanical life. On the other hand, it is extremely difficult to obtain worth-while penetration of eucalypts by conventional pressure treatment. Investigations are now in hand to discover why oil preservatives confer some mechanical protection, and interim conclusions are that end-splitting and surface checks developing during service are largely initiated and extended by moisture gradient stresses caused by the alternate wetting and drying of the sleeper, and consequent movement of the case over the core. Preservative oils are considered to be beneficial in reducing the moisture gradient stresses, but heavy absorptions at the ends and in the case are necessary to retard moisture changes, to replenish the surface film, and to assist in covering the sleeper with an oil-dust layer. Such penetration cannot be effected in the heartwood of most eucalypts by normal pressure treatment, due to its high refractory to penetration, and though incising does assist case absorption it has not secured the results desired.

Treatment at high pressures up to 1,000 lb. per sq. in. has been found to be effective in obtaining adequate absorption in most eucalypt species. A small pilot cylinder with walls 1 in. thick and steam-jacketed externally to eliminate internal coils was first used experimentally. It was found that it could be operated so rapidly at 1,000-lb. pressure that eucalypt sleepers could be treated successfully in a 1-hr. schedule. As 3-in. plate is available in Australia there seems no obvious technical reason why 6-ft. internal dia. cylinders of this thickness should not be fabricated for commercial treatment at this high pressure.

A two- or three-fold increase in absorption in eucalypt heartwood has been usual at 1,000-lb. pressure as compared with that in matched material treated to refusal at 200-lb., and there has been no visible damage to the timber so long as the oil temperature is reduced to 150°-160° F. High-pressure treatment of green eucalypt heartwood has given oil absorptions averaging 3 to 5 lb. per cu. ft. in several species tested. With drier material the figure is generally doubled for jarrahs, karri, and marri treated at 1,000-lb. pressure by the full-cell process without incisions, the average treatment cycle being about 1½ hr.

Other aspects of the problem of retarding mechanical failure include (a) the initial drying of sleepers free from serious degrade, (b) further work on incision patterns, (c) the selection of the most suitable oil mixture, and (d) close attention to methods of rail fastening and ballasting. The drying of such timbers as are considered above could probably be effected by incision and treatment in the green condition, especially as this saves up to two years required for air-drying, which also requires heavy application of end-coatings to reduce splitting. It seems likely that some compromise between these two extremes will be found to be the most economical solution of this problem, and work to this end is proceeding. It is significant that in these studies the importance of shielding the ends and tops of sleepers with a covering of ballast in dry and hot climates is not being overlooked, as it is considered that it would certainly be desirable, and might even avoid the necessity for pressure treatment of durable species.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Birmingham-Ely Express Service

September 9

SIR,—The British Railways winter service announcement reported in your August 29 issue states that, among summer trains to be retained for the convenience of business men, is the express service between Birmingham and Ely. For the benefit of intending travellers it might perhaps be pointed out that the service leaves Birmingham at 7.30 a.m. and arrives at Ely at 12.28 p.m. (122 miles) after having made 28 intermediate stops. The return journey, departing at 2.15 p.m. and arriving in Birmingham at 7.2 p.m., has an overall speed of about 23 m.p.h.

Yours faithfully,

R. HOWARD

21, Mayfield Road, Moseley, Birmingham

legitimately be re-equipped to show Holden's system of oil-firing. (2) No locomotive class has ever beaten the prodigious outputs of the "Clauds" (relative to their size and adhesion) on the 400-ton "Norfolk Coast Express" pre-1914. (3) There should be *one* example (at least) of the old G.E.R. preserved for posterity, instead of the preservation of full-size locomotives remaining the monopoly of a few companies. (4) How many other 20th century designs remained on first-class express work 30 (and more) years after the design originated? I have seen "Clauds" on 12-coach trains in the 1930s coming through Gidea Park quite effortlessly and with considerably less exhaust and rattle than the "BIs" designed since 1939.

Yours faithfully,

R. A. PASCALL

72A, Quarry Green, Kirkby,
Near Liverpool

Laminated Shoebeams for Rolling Stock

September 11

SIR,—I was most interested to read in your issue of September 5 the report on laminated shoebeams for rolling stock. This shows that the railways are alive to the possibilities of newer methods of using wood.

There is, however, one point I should like to raise; it is stated that "artificially-seasoned shoebeams, however, are liable to splitting and other defects under arduous service conditions." This view of kiln-seasoned timber (the more correct term for "artificially-seasoned"), does not match the progressive outlook on the use of wood shown in the article as a whole. Tests over many years have shown that timber, when properly kiln-dried, is as good and no more liable to defects than air-seasoned timber.

In many instances it is imperative to use kiln-dried timber in order to reduce the moisture content of the wood sufficiently to be fully effective for service requirements; for example, air seasoning seldom reduces the moisture content below 18 per cent. to 20 per cent., whereas timber in heated interiors stabilises at around 12 per cent. This latter figure could only be achieved by kiln-drying.

Yours faithfully,

B. ALWYN JAY,

Deputy Director (Technical Services)

Timber Development Association Limited,
21, College Hill, London, E.C.4

Extent of 3-ft. Gauge in Sweden

September 5

SIR,—On page 394, in your April 11 issue, you had a note about railways with 3-ft. gauge. It is indeed a rather unusual gauge but I would like to add to your article that in Sweden there are about 1,750 miles of 3-ft. railways, most of them of only local interest but some with rather heavy traffic.

In southern Sweden there is a 330-mile system with 3½-ft. gauge, part of which is being rebuilt to standard gauge. At the station of Växjö there are thus three gauges (3 ft., 3½ ft. and 4 ft. 8½ in.) which somewhat complicates the track and switch-work. Only imagine a switch which contains all three gauges!

Yours faithfully,

PÖRJE THOURSIE

4, Berggrensgatan, Gothenburg S., Sweden

[We are indebted to our correspondent for sending us a railway map of Sweden, marked up to show the three gauges to which he refers. Växjö, on the standard-gauge line from Karlskrona to Gothenburg, is the junction with the 3½ ft. gauge from Ronneby and a 3-ft. line from Västervik.—ED., R.G.]

Mile-a-Minute Schedules

September 11

SIR,—I was interested to read the editorial note with the above title in your issue of August 29, but I wonder if you, inadvertently perhaps, have done less than justice to the enginemmen of Nine Elms shed who run the "Atlantic Coast Express" between Waterloo and Salisbury in both directions? My own experience is that they are a most keen and painstaking link, and my first personal experience of the "Atlantic Coast Express" since the accelerations was just the reverse of the characteristics you suggest.

It is true that the up train, by which I travelled, has an easier timing, but two heavy slacks for permanent way repairs, costing 6½ to 7 min. between them, constituted a serious hindrance on a timing of 87 min. from Salisbury to Waterloo. Yet with a 13-coach train engine No. 35025 was handled so vigorously that we passed Clapham Junction, 79.9 miles, in 79 min. 40 sec., checks included, and reached Waterloo on time. The net time would certainly not be more than 80½ or 81 min. for the run of 83.8 miles.

As for the North Eastern Region, start-to-stop runs of less than 40 min. over the 44.1 miles from Darlington to York are now quite common, with "A1," "A2," "A3," and "A4" Pacific engines, and occasionally with the "Green Arrow" 2-6-2s. as well.

Yours faithfully,

O. S. NOCK

20, Sion Hill, Bath

Preservation of ex-G.E.R. Locomotives

September 4

SIR,—Among the various locomotives preserved at different locations in this country there is not a single example representative of the Great Eastern Railway.

I feel most strongly that such a locomotive should be restored and preserved in the form of either a "Claud Hamilton," of which some "Super-Clauds" are still in their original condition, or should I say "style"), or a "1500" of which a few un-rebuilt examples are, I believe, still in service in Scotland.

These locomotives may not have the same value, historically, as the G.W.R. "Star" but possess quite as much as any of the locomotives in York Museum. They are first class locomotives (particularly the "Clauds") and one of either class should be chosen to illustrate G.E.R. practice before it is too late.

I realise that it is not possible to have every class of British locomotive represented in the full-size collection, but several railways are represented in multiple, i.e., two M.R. and G.W.R., three N.E.R. and G.N.R., and two Caledonian.

What locomotive is better fitted than a "Claud," in any of its pre-grouping forms, to represent the ex-G.E.R.?

To support this claim I suggest: (1) A "Claud" could

THE SCRAP HEAP

Praise for Pullmans

Sir,—I am reluctant to take up your space considering the serious events taking place in the world today, but I think a word of appreciation should be recorded of two excellent meals on two Pullmans of British Railways. One was London to Bournemouth and the other Bradford to Kings Cross. The luncheon served on the latter could not have been improved. The cooking and service were admirable. The system of having dishes à la carte as well as a set menu is helpful to many.—*From a letter to "The Times," by the Dowager Lady Swaythling, Member of Council, Wine and Food Society.*

Sir,—The Dowager Lady Swaythling is mistaken in assuming that the good meals she was fortunate in sampling in Pullman cars are in any way to the credit of British Railways. Pullman cars are the last vestige of service, civility, and, incidentally, private enterprise left in our railway system. About the dining cars of British Railways—quite a different matter—perhaps the less said the better.—*A rejoinder from Mr. J. K. Morland to Lady Swaythling's letter quoted above.*

M.R. Veteran for Scrap Heap

L.M.R. locomotive No. 40383, the last of the old Midland Railway 4-4-0 non-superheated class "2" passenger engines, has been withdrawn from stock for breaking up. Designed by S. W. Johnson and built in 1888, this engine was one of a batch of ten. She had 6 ft. 6½ in. dia. coupled wheels, 18 in. × 26 in. cylinders and a "B" class boiler with a working pressure of 160 lb. per sq. in., giving a tractive effort of 12,960 lb. A larger "H" class boiler with a working pressure of 175 lb. per sq. in. was fitted in June, 1904, raising the tractive effort to 14,487 lb.

The entire class was rebuilt by Fowler, No. 383 being dealt with in 1909. A "G.7" boiler was fitted but the work-

ing pressure and tractive effort remained the same. At nationalisation only two of these locomotives remained in stock, and these were renumbered 40383 and 40385. No. 40385 was withdrawn from stock in 1949.

The total mileage run by No. 40383 was 1,064,149 and her last years were occupied in pulling the Derby District Engineer's saloon on inspections round the district.

Further Outlook Fair



Studying one of the weather forecast boards that have been a useful feature of N.E. Region stations this summer

Underneath Chicago

Not many people know it, but beneath the Loop business district of Chicago is an amazing two-foot gauge network of railroads, 62 miles in extent, intercepting at 700 points, and providing a

forwarding and delivery service to railroads, department stores, warehouses, government buildings, office buildings and manufacturing plants. It crosses under the Chicago River at 11 points.—*From "Streamliner," the journal of the Electro-Motive Division of General Motors.*

Taken for a Ride

A three-and-a-half year old Plymouth boy who had been sent out to play by himself on Saturday morning, could not be found at lunch time. Five hours later his parents received a message from the police that he was in an express train, next stop Reading. His mother forecasts that he will become a keen engine spotter.

Clyde Peeresses

Some of the grievances (over Clyde steamer services) are, perhaps, merely a matter of pride. To have known service with a real steamer that could race its rivals, and to have to put up with a little motor vessel more fit for the Forth and Clyde Canal than for one of the great waterways of the world, is hard indeed. *The Countess of Breadalbane* is a trim little craft, but its home port should be Kirkintilloch or, possibly, Fort Augustus. The Railway Executive . . . shows, however, a fine sense of hierarchy. For *The Countess of Breadalbane* is much smaller than *The Marchioness of Lorne*, which, in turn, is much smaller than the *Duchesses* (of Hamilton and Montrose). There may be more than mere rank in the peerage involved, for both Breadalbane and Lorne are Campbell titles, and the two *Duchesses* recall the transfer of lordship over Arran, from Hamilton to Graham, which death and marriage brought in the not distant past. But I think British Railways missed a chance in not building three *Duchesses* or in not giving one of them three titles. What if one could say to the English visitor, "That's *The Duchess of Hamilton, Brandon, and Chatellerauld* coming up to the pier"?—*D. W. Brogan in "The Spectator."*

Sorry—No Service!

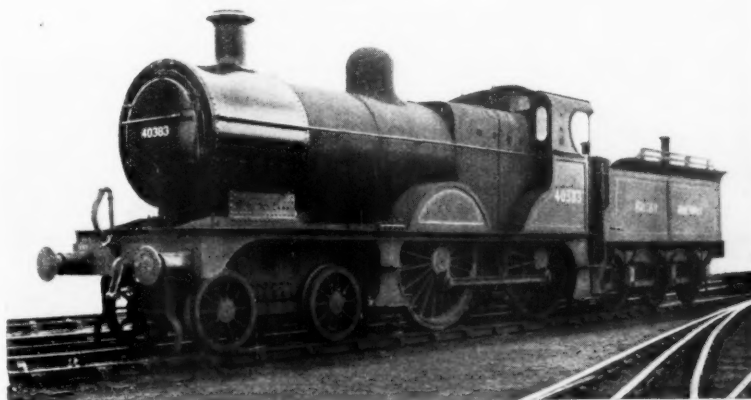
To judge by statements that derive from the Hotels Executive, Railway hotels are on the run. And cease to function, one by one. Unless somebody stops the rot, They'll liquidate the jolly lot.

But, surely, they'll reserve a few For service still as rendezvous For those outposts of enterprise, "Standing," "Ad hoc" and otherwise, Who spend their days in cosy chat, Deftly debating this and that.

Sometimes the H.E. deigns to tell What prompts the sudden urge to sell, But no one states the reason why The customer decides to buy— Unless—a quaint conceit today— Somebody hopes to make them pay!

SCORPIO

D 2



Former Midland Railway class "2" 4-4-0 No. 40383, last of its non-superheated passenger service, now withdrawn for breaking up

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Postwar Railway Problems

Opening an agricultural congress in the Cape Province recently, the Minister of Transport, Mr. P. O. Sauer, said that the South African Railways were rapidly regaining ground lost during and after the war. The S.A.R. & H., he said, soon would be able to fulfil all demands made on it. At present the railways had 430 locomotives (including electric) on order, to cost £8,000,000; there were also 4,000-5,000 wagons on order. The problem lay in keeping pace with an unprecedented economic development.

In 1938, the railways had carried 36,000,000 tons of goods, said the Minister. In 1945, this figure had risen to 48,000,000 tons and had since been increasing at the rate of 3,000,000-4,000,000 tons a year, until last year it reached 65,000,000 tons.

Since the war capital expenditure had increased from £14,000,000 in 1945-46 to about £30,000,000 this year. When the Cape Town-Touws River line was electrified it would end the bottleneck at that section and release more steam locomotives for use in other parts of the Union.

Delays in the delivery of equipment ordered from overseas were a major problem, said Mr. Sauer, as was the water shortage in many parts of the Union; efforts were being made to procure condenser type locomotives to run on sections where water was scarce.

WESTERN AUSTRALIA

"W" Class Locomotives

The last of 60 "W" class Beyer-Garratt locomotives built by Beyer Peacock & Co. Ltd., recently was placed in service.

The engines in service have fulfilled earlier hopes. They have proved reliable in traffic, good steamers, and are popular with enginemen. Painted green, with the Railway Department crest (black swan in a black circle with yellow background) they are becoming a familiar feature throughout the system, particularly on country branch lines with light rail sections, for which they were originally obtained.

Metal Trades Strike

Since February, 1952, the metal tradesmen members of the Amalgamated Engineering Union and the Federated Society of Boilermakers employed in running sheds on the Government Railways have been on strike for double their present wage margins, some 200 men being involved. In April, they were joined by a further 600 members of the same unions employed in the Department workshops. The strike necessitated curtailment of passenger services, suburban services being

entirely suspended for a time, and country passenger services severely cut. Goods services generally were maintained as long as possible but ultimately an emergency road transport scheme was put into operation and run in conjunction with the remaining rail services.

The strikers resumed work on August 18. At that date only 79 engines remained in traffic out of a total of 449, of which 354 were available for traffic at the beginning of the strike. The original claim was resisted by the Railway Department and the Government on the grounds that rates of pay were a matter for the Arbitration Court. The men returned to work without gaining any increase in wage rates.

The strike caused a loss of revenue to the State and considerable hardship to railway workers generally, many of whom have been and are still stood down either wholly or partially, because work is not available for them. It will be some time before sufficient locomotives can be repaired and restored to service to allow the functioning of normal services.

NEW ZEALAND

Rail Imports from U.S.A.

Two shipments of 90-lb steel rails manufactured in the U.S.A. unloaded in Auckland for the Railways Department, are the first to come from the U.S.A. since Lease-Lend consignments during the war. The rails will be used in the next stage of duplicating the North Island main trunk line between Paerata and Tuakau and as replacements.

The Government placed long-term orders for rails in America when difficulty was experienced in getting deliveries from Britain. A total of 2,810 rails has been landed at Auckland. Fasteners, orders for which were placed with other American manufacturers, have not yet been delivered.

UNITED STATES

Another Gas-Turbine-Electric

A second gas-turbine-electric locomotive design is now in service. It has been built jointly by Westinghouse and the Baldwin-Lima-Hamilton combine, and is of the single-unit Bo-Bo-Bo-Bo type, rated at 4,000 h.p. Its first experimental run was on the Missouri-Kansas-Texas main line, hauling the "Bluebonnet" passenger express over the 274½ miles from Parsons to Denison, and returning with the "Katy Flyer," a round trip of 549 miles daily, with numerous intermediate stops.

Between April 18 and July 1 the gas turbine locomotive covered some 26,000 miles in this way, and according to officers of the "Katy" line, gave very

satisfactory results. Of particular interest to the builders was the behaviour of the locomotive in high temperature conditions in the southern states. The other American gas-turbine-electric design, which has been in service for over a year, is the General Electric, of which ten units have now been bought by the Union Pacific Railroad.

ARGENTINA

Station Names Changed

The city of La Plata, capital of the Province of Buenos Aires, will henceforth bear the name Eva Perón, in memory of the late Señora Perón. The name of the station of the General Roca Railway in La Plata has been modified accordingly. The Tucumán station of the General Mitre Railway will shortly be renamed "26 de Julio," the date of the death of Señora Perón.

New Diesel Express Service

The General San Martín Railway has introduced a new express service between Buenos Aires, Mendoza, and San Juan, using four-coach diesel-electric sets conveying 312 passengers (one class). The overall speed is 45 m.p.h. Tickets for reserved seats are sold at the price of ordinary second class tickets with the addition of a supplement of 40 per cent. A bar service is provided throughout the journey.

FRANCE

Zonal Centres

The opening of zonal centres by the S.N.C.F. has led necessarily to an increased use of road services between outlying stations and areas, and the zonal centre. Under the terms of the 1949 co-ordination decree, road services replacing railway services were not to be provided directly by the S.N.C.F., but were to be operated by road haulage undertakings under contract to the S.N.C.F., although charges were to be raised in accordance with the railway tariff.

The Minister of Public Works & Transport has now ruled that this procedure shall be applied to road services operated in connection with a zonal scheme. The S.N.C.F. must therefore entrust such services to suitable road haulage undertakings, both as regards wagon-load and smalls traffic. The charges to the trader will be the same, in general, as for equivalent traffic moving by rail, but the road haulage undertaking will normally be paid by the S.N.C.F. at a standard rate per unit in accordance with a contract between the railway and each road haulage concern.

Provision is also made by the Minister for the transport firm to carry other consignments by road in addition to the traffic carried for the S.N.C.F.; mixed loads consisting of S.N.C.F. and other traffic can be conveyed if required.

Tonnage Rating of Steam Locomotives

Methods of working out curves of hauling capacity in which mathematical work is reduced

(By a Correspondent)

MANY diverse factors have to be taken into consideration in fixing the loading of steam locomotives on freight service, and the methods used in establishing these tonnage ratings vary from one railway to another. The incidence of gradients, length of haul, distance between stops, fuel and water capacity of tender, and type of traffic all have to be considered. This last factor involves consideration of the average weight of wagon on different services. Extensive trials carried out in the U.S.A. and India have demonstrated clearly that the resistance of wagon stock varies, not only with the train speed, but also with the average weight of the wagons forming the train.

Where there is little variation in the average weight of the wagons in one goods service as compared with another, it is permissible to base the locomotive loadings on one weight of wagon, but where there is considerable variation in the average weight in train formations, due either to type of traffic or direction of flow, it is desirable in the interests of equitable loading that allowance should be made for this in the allocation of locomotive loadings.

The "equated" or "adjusted" tonnage rating system used in North America for many years is based on this precept. The application of such a

system involves equating the drawbar pull of the locomotive to the resistance of the rolling stock under various conditions of speed and gradient. To attempt this without dynamometer car data of the drawbar pull of the locomotive and rolling stock resistance is considered in some quarters as too theoretical or academic for practical use. Moreover, the amount of mathematical work involved in developing a tonnage rating system is in itself a deterrent to the operating man beset with everyday problems. Doubts may also exist as to the economic advantages, if any, which the introduction of such a system would give in practice.

Some years ago an overseas railway company, believing that its existing system of locomotive loading was not fully satisfactory, decided to introduce an equated tonnage rating system. The original system did not take into account the actual weight of the wagons forming the train, but assumed all 2-axle wagons as having the same tare weight and assigned so many tons of locomotive load according to whether the wagon was empty, up to half laden, or over half load. In the same way all bogie wagons were considered as having the same tare weight, the locomotive load assigned ranging in steps according as the load varied from 25 tons upward for each 5 tons. The

system was simple and easily memorised by traffic staff, but spot checks from time to time revealed that the actual loads hauled by the locomotives were often below the rated loading, and sometimes considerably so.

The amount of calculation involved in the development of the tonnage rating system in question was considerable, and it is an appreciation of this which has prompted the writer to develop the method hereafter described with a view to reducing the mathematical work in the preliminary stages of such an investigation.

In the absence of dynamometer car data as to wagon

resistance, and as a previous investigation had revealed a general similarity, the wagon resistance formulæ of the late L. H. Fry was used as a basis, but with adjustments to allow for the various types of wagons in service. This had the effect of increasing the resistance per ton of the lighter loaded wagons and also allowed for the difference between the American short-ton as used in Fry's formulæ and the long-ton of 2,240 lb.

The resistance values in question are shown in Fig. 1, which it will be seen has been arranged in the reverse manner to the usual diagram of this nature inasmuch as the resistance values per ton of average wagon weight are set to increase downwards, and have been plotted to a logarithmic scale. The reason for this will subsequently be apparent. The range of wagon weights is from 25 to 75 tons and the diagram in itself emphasises the considerable difference in the resistance per ton between the light and heavy laden wagon. In practice, however, the range of average wagon weights on any particular service is seldom so wide, and as locomotive freight ratings on the level are of little value, a further diagram (Fig. 2) has been prepared in which the resistances of wagons of 30, 45, and 60 tons on gradients of 1/500, 1/250, and 1/150 have been indicated.

To apply this data the drawbar pull of the locomotive is required, and in the lack of either dynamometer car or indicating records, this has been calculated on the basis of boiler capacity using a fair measure of conservatism.

As an example, a goods locomotive of 116 tons weight with a rated tractive effort of 45,600 lb. at 85 per cent. boiler pressure may be considered, the boiler data being as follow:—

Distance between tubeplates ...	18 ft.
Heating surface—	
Small tubes ...	1,620 sq. ft.
Large tubes ...	880 sq. ft.
Firebox ...	260 sq. ft.
Superheater surface ...	640 sq. ft.
Grate area ...	46.5 sq. ft.

At the conservative evaporation rates of 10.2 and 10.8 lb. per sq. ft. for the small and large tubes respectively and 55 lb. per sq. ft. for the firebox surface the total evaporation per hour is 40,300 lb. or 14.6 lb. per sq. ft. of evaporative heating surface. Though the locomotive would be fitted with an exhaust steam injector no allowance has been made for this in calculating the evaporation on the assumption that the economy from this source will compensate the steam requirements of locomotive and train auxiliaries.

With a boiler pressure of 200 lb. per sq. in. and a fair degree of superheat such a boiler might reasonably be rated

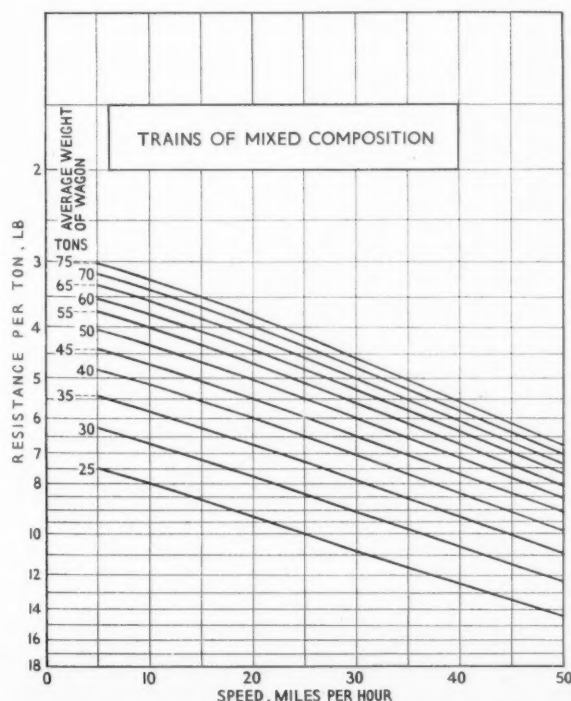


Fig. 1—Resistance of wagons on level

at 2,000 h.p., but in view of the relatively slow speeds of the service and so as to keep the firing rate within the capacity of one fireman for the purpose of calculation it has been taken at 1,850 h.p. The tractive effort has been based on this, but from starting up to a speed of 20 m.p.h. the tractive effort curve has been based on the well known Baldwin tractive effort/heating surface method for a ratio of 14.0/1.

The resistance of the locomotive and

speed and gradient is a matter of equating the drawbar pull under these conditions to the resistance of the particular type of wagon under the same conditions we can write:—

Hauling capacity in tons=

Drawbar pull in lb.

Resistance per ton in lb.

As we know that $a/b = \log a \text{ minus } \log b$ if we plot the value of "a" to a convenient logarithmic base, and then

3 on transparent paper or cloth the operation of marking down these distances can be expeditiously carried out by superimposing this diagram over that of Fig. 2 and setting the drawbar pull line for the particular speed and gradient over the datum line when the points where the resistance curves intersect the vertical speed lines can be traced through. This operation is carried out for each speed in turn and the points forming the curves of hauling

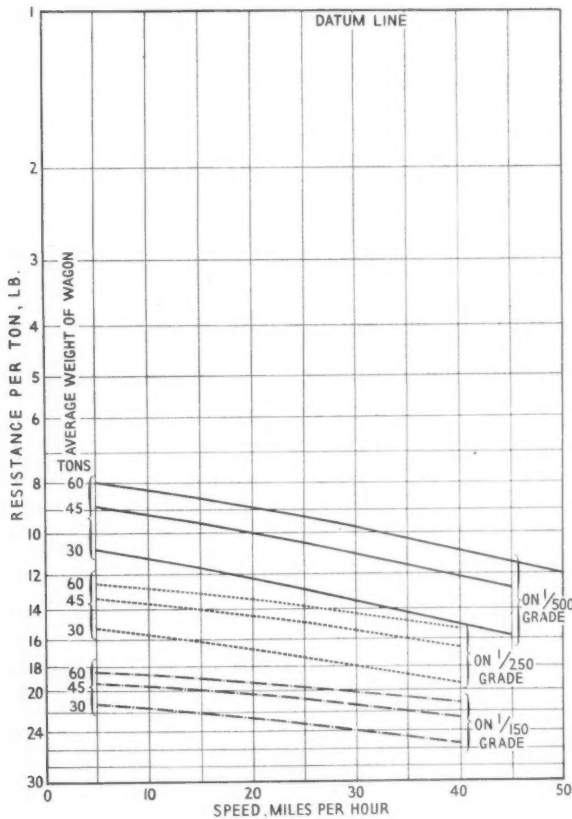


Fig. 2—Resistance of wagons on gradients

tender has been calculated by the Davis formulae on the following basis:—

Weight of locomotive	...	116 tons (2,240 lb.)
Cross-sectional area	...	120 sq. ft.
Weight of tender	...	86 tons
Cross-sectional area	...	100 sq. ft.
Mechanical resistance of locomotive	...	86 tons at 20 lb. per ton

With the foregoing data available the tractive effort and drawbar pull can be plotted as shown in Fig. 3. It will be seen that a 10 per cent. reserve of tractive effort has been allowed to cover possible contingencies in service, and the drawbar pull on the level and on gradients of 1/500, 1/250, and 1/150 has been based on this lower value.

This diagram has also been prepared with the tractive effort and drawbar pull scale drawn to the same logarithmic base as used for Figs. 1 and 2. The purpose of this will now be explained. Since the hauling capacity of the locomotive under any particular combination of

from that point plot backwards to the same logarithmic base the value of "b", the distance which separates these lengths when measured from unity on scale "a" is the log. of the quotient a/b , in other words the simple operation of division as made on the slide rule.

In Fig. 3 the logarithmic scale is extended downwards beyond the useful range of drawbar pull. If the distance from the datum line on Fig. 2 to the resistance of the wagons at any of the indicated speeds or gradients is marked downwards from the drawbar pull at that speed and gradient the values at the bottom of the logarithmic scale will represent the hauling capacity in tons. By making the pull speed diagram Fig.

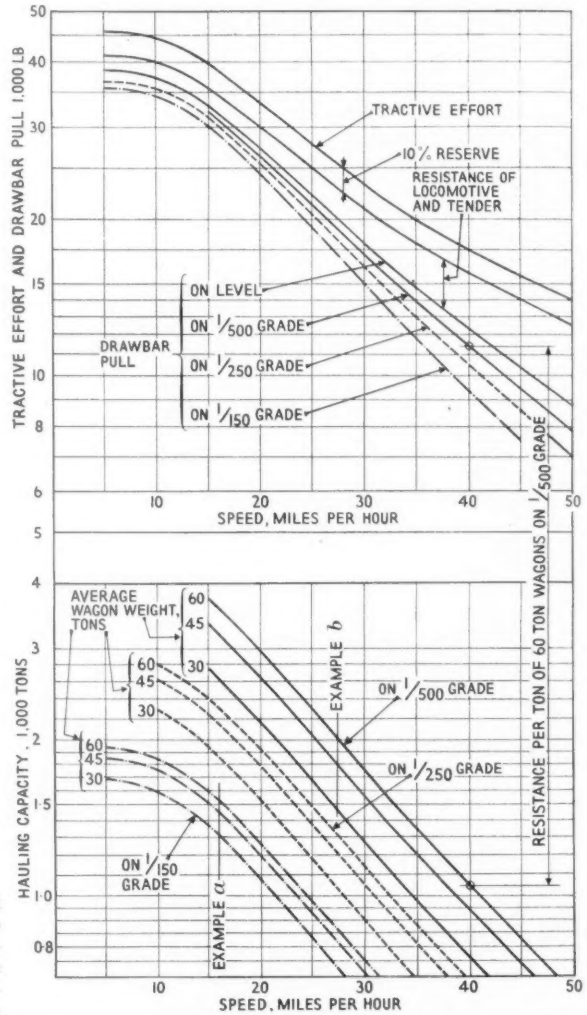


Fig. 3—Tractive effort, drawbar pull and hauling capacity of goods locomotive

capacity as shown in the bottom portion of Fig. 3 can be obtained very quickly without the tedious calculations which would otherwise have been involved. The accuracy of the diagram will of course be a measure of the care taken in its preparation, but with reasonable draughtsmanship an accuracy comparable to the usual slide rule calculation can be obtained.

It is not suggested that diagrams such as that described should supplant the usual loading tables, but when tonnage rating is under consideration their use

will facilitate the preparation of the tables, and give a very graphic picture of the variation in loading under different conditions of speed, gradient and average wagon weight.

In actual practice allowance will have to be made for other factors not included in the resistance data, such as uncompensated curves, weather conditions, length of sidings, and so on, and these will modify the tonnage ratings.

Practical Examples

The following examples (Table 1 and Table 2) from actual practice for a freight locomotive of almost the same characteristics as that just considered may be quoted. The operating conditions are a long steady gradient with an average value of $1/170$ over a distance of 35 miles with some maximum gradients in the vicinity of $1/150$. The operating speed required to meet the timetable requirements being approximately 16.0 m.p.h.

TABLE 1

Example a	Loading, in tons	
Average weight of wagon	From diagram on $1/150$ grade	Actual practice
Tons	Tons	Tons
30	1,320	1,220
45	1,450	1,350
60	1,520	1,430

A further example of the rating of the same locomotive on a long gradient of just over 50 miles with an average value of 1 in 600 at an operating speed of 27.5 m.p.h. is given in Table 2. In this case the curves for the 1 in 500 gradient are used for comparison.

TABLE 2

Example b	Loading, in tons	
Average weight of wagon	From diagram on $1/500$ grade	Actual practice on $1/600$ grade
Tons	Tons	Tons
40	1,460	1,460
45	1,790	1,760
60	2,000	1,950

It may be added that the locomotive and tender resistance data used in the calculation of the loading tables from which the foregoing examples of actual practice have been taken were not exactly the same as used in this study.

With regard to the results obtained from the introduction of the tonnage rating system, a comparison covering the three years before with the three years after its introduction showed: (a) increase in average train-load, 19 per cent.; (b) increase in ton-miles per engine-hour, 28 per cent.; (c) reduction in fuel consumption per ton-mile, 20 per cent. In addition the average speeds of the goods trains showed a slight increase, and, on the whole, the introduction of the system resulted in an improved utilisation of the motive power available.

While perhaps the method employed in calculating the drawbar pull may be

considered somewhat empirical and open to criticism, nevertheless such methods are often the only ones available to engineers on overseas railways where equipment for scientific testing and analysis is not available.

Passenger Locomotive Application

With a view to ascertaining whether the same methods could be used on passenger train services, an analysis has been made of the performance of a passenger locomotive on another railway but working under somewhat similar track conditions though on much easier grades. The locomotive in question has

h.p., and the tractive effort calculated accordingly from a speed of 30 m.p.h. From starting to this speed the tractive effort curve is based on the Baldwin TF/HS ratio of $13.0/1$.

The same reserve allowance of 10 per cent. has been on the tractive effort as in the case of the goods locomotive and the resistance by the Davis formulae has been calculated for the following:—

Weight of locomotive ...	98 tons
Cross-sectional area ...	120 sq. ft.
Weight of tender ...	76 tons
Cross-sectional area ...	100 sq. ft.
Mechanical resistance of locomotive ...	57 tons at 20 lb. per ton

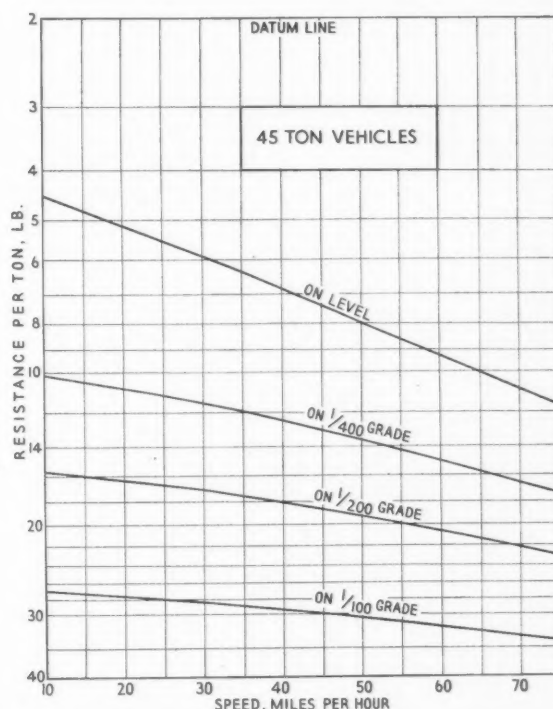


Fig. 4—Resistance of coaching stock on level and gradients

a rated tractive effort of 38,000 lb. at 85 per cent. boiler pressure, the boiler data being as follow:—

Distance between tubeplates ...	17 ft. 6 in.
Heating surface—	
Small tubes ...	1,220 sq. ft.
Large tubes ...	800 sq. ft.
Firebox ...	225 sq. ft.
Superheater surface ...	680 sq. ft.
Grate area ...	43 sq. ft.

Based on the same evaporation rates as in previous example, the estimated total evaporation per hour is 33,500 lb. or 14.9 lb. per square foot of evaporative heating surface. In this case also the auxiliary steam requirements are assumed as being balanced by the economy from an exhaust steam injector.

The operating conditions being mainly on comparatively level track where full advantage may be taken of short cut-offs and a working pressure of 225 lb. per sq. in., the boiler has been rated at 1,680

The average weight of the passenger vehicles has been taken at 45 tons and the resistance calculated by the Davis formulae.

The resistance curves for the coaching stock on the level and on grades of $1/400$, $1/200$, and $1/100$ are shown in Fig. 4, while the tractive effort and drawbar pull of the locomotive under the same conditions are shown in the top portion of Fig. 5. Following the same procedure as in the previous example, the hauling capacity curves are as indicated in the bottom portion of Fig. 5.

It will be noted that the datum line in Fig. 4 has been taken at a value of 2 lb. This has been done to keep the overall height of the diagram within reasonable dimensions suitable for reproduction in a technical journal. The hauling capacity line for 1,000 tons is determined by taking any value on the resistance scale (Fig. 4), which is exactly $1/1000$ part of a value on the drawbar pull scale (Fig. 5);

for example, the value from the datum line to 40 or from the datum line to 20. This distance is marked downwards from the appropriate drawbar pull value on Fig. 5, namely, 40,000 lb. or 20,000 lb. in this case, the other points on the hauling capacity scale being marked to the logarithmic base from this point. The curves of hauling capacity are obtained as previously described by successively marking down from the appropriate drawbar pull the values corresponding to the coach resistance under the different conditions of speed and gradient.

As in the case of the freight service, allowance has to be made for other

gradients worthy of mention being some short and well separated sections totalling in all 6 miles at an average of 1/200. This may conveniently be compared with the performance on the level as shown in Fig. 5.

Example	Weight of train	Average speed over distance	Maximum speed per schedule	Balance speed on level per diagram
	Tons	m.p.h.	m.p.h.	m.p.h.
c	400	59	65	69
d	500	53.5	60	64.5

Projected services for this locomotive include trains of 600 tons on continuous

actually plot the various values to a logarithmic base; these can very readily be traced from a sheet of log paper and the diagrams in this article have been prepared in this way.

It is sometimes claimed that the steam locomotive does not lend itself to mathematical analysis of performance owing to the various incalculable factors, including the human element, which have to be considered, and that the only satisfactory basis of judging the capabilities of a locomotive are actual service trials. This is only partly true, as some trials are in themselves more a test of the power requirements of a particular train, and do not give a true picture of the capacity of the locomotive.

Moreover, the very flexible nature of the steam locomotive, particularly under the expert handling generally existing on trials, often permits operation under conditions which could not be reproduced in everyday service. For example, the writer is acquainted with trials carried out with the two types of locomotive referred to in this article when the performance was superior to that shown in the diagrams.

Diesel Traction

In the case of studies involving the introduction of diesel-electric traction a critical analysis of the desired performance is a prerequisite of any proposed design, particularly as regards generator and traction motor ratings. That such detailed investigation is necessary with this form of railway traction may have the effect of making railway engineers more critical than hitherto of the rating and performance of steam power.

Lack of suitable equipment for testing, and a distrust of theoretical calculations, often deters some engineers from carrying out a systematic analysis of locomotive performance, but the examples quoted above indicate that empirical methods can be used which give results well in accord with actual practice.

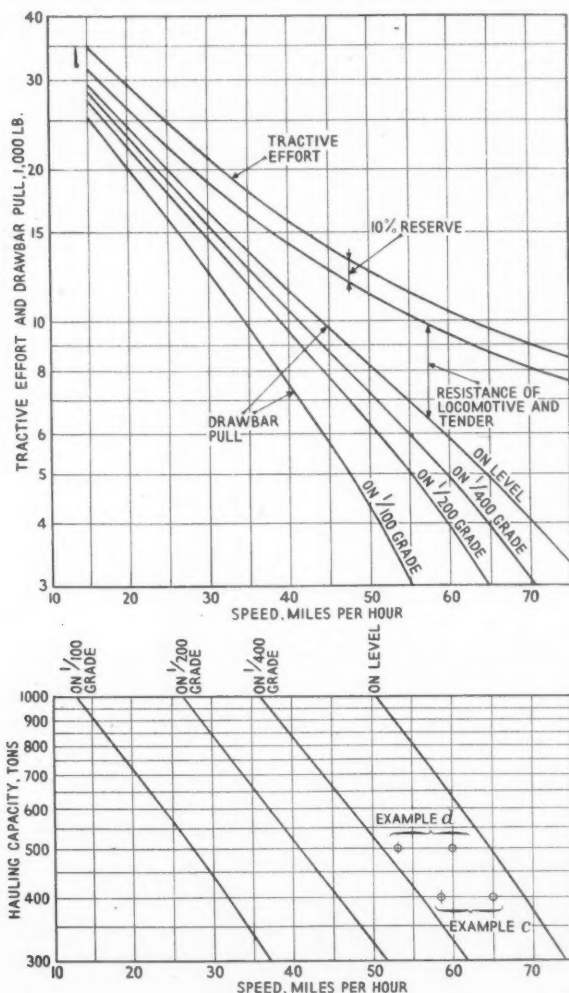


Fig. 5—Tractive effort, drawbar pull and hauling capacity of passenger locomotive. The vertical scales of the two sections of the diagram are inter-related

factors such as weather, speed restrictions, and so on, but the following examples taken from service timings show that this somewhat empirical approach to analysis of performance gives reasonable results.

The examples are from a main-line express service over a comparatively level section of 56 miles, the only

gradients of 1/400 and 800 tons on gradients of 1/200, which according to the diagram could be handled at speeds in the region of 47 and 31 m.p.h. respectively, these being well in accord with the actual timings required for the trains in question.

In the preparation of diagrams such as those described, there is no need to

GLACIER CENTRIFUGAL OIL FILTER.—The Glacier Metal Co. Ltd. is manufacturing under licence from Albion Motors Limited a centrifugal oil filter, for the manufacture of which the firm has recently established a factory in Scotland. Members of the technical press were invited on September 3 to witness a demonstration of the efficiency of the filter on a test rig. The capacity of the filter is 20 cu. in., the cleaning period depending on engine size and conditions of operation. From experience already gained it is recommended that the filter is cleaned after 50,000 miles when used with a 60 b.h.p. engine; 30,000 miles with a 100 b.h.p. engine, and 25,000 miles with a 120 b.h.p. engine. The visitors, who were received by Mr. W. B. D. Brown, Chairman & Managing Director, were afterwards taken on a conducted tour of the works to see the various operations pertaining to the products of the firm, the sections visited including the mechanised bronze foundry, production of various bearings for diesel, petrol and oil engines, and also the bearing repairs and service division.

Reconstruction of Barmouth Viaduct, Western Region

Timber spans replaced with pre-cast, pre-stressed Freyssinet concrete beams

THE Old Chapel Viaduct carries the single track of the Western Region line to Pwllheli over a small beach near the harbour just south of Barmouth Station. Built in 1867 for the Cambrian Railways, the viaduct consisted of twelve timber spans, each of about 20 ft., carried on timber piles. At the Barmouth Junction end, the line approaches the viaduct on a short embankment separating the bridge from a tunnel under the main road from Dolgelley; at the other end the viaduct adjoins the 40-ft. girder bridge over the Harbour Road. The viaduct crosses the beach within a few feet of the sea-wall, behind which there is a public garden, the main road and a row of residential buildings—features which influenced the choice of design for the new viaduct.

Reasons for Reconstruction

The timber in the original viaduct had reached a state of decay and, although a number of parts had been replaced and the spans strengthened from time to time, the cost of further maintenance was such that total reconstruction had to be faced.

Choice of design for the new viaduct was the outcome of discussions with the local authorities, who called for a structure which, while interfering as little as possible with the view across the Maw-

dach Estuary from the public garden, would not obstruct the prospect from the houses on the other side of the road. A superstructure of pre-stressed concrete spans of 40 ft. was chosen because these required the minimum construction depth and, therefore, interfered as little as possible with the view. They also permitted the laying of a ballasted cross sleeper track at a place where the rail level could not be lowered because of the close proximity of the Harbour Road bridge at one end, below which the headroom was already restricted and could not be raised more than 6 in. because of the tunnel near the Barmouth Junction end. Moreover, concrete spans presented the best chance of making a bridge which would have a pleasing appearance and, at the same time, require very little maintenance in the future.

The new spans rest on concrete piers founded on mass concrete foundations carried some 10 ft. down in the firm sand of the beach. Each pier consists of two 3-ft. square pillars of mass concrete reinforced with vertical bars and faced with pre-cast concrete blocks. The tops of the pillars are capped with a pre-cast reinforced concrete cross head carrying the concave steel bedplates for the spans. The surface of the pillars, as also the new abutment at the

Barmouth Junction end, have been bush-hammered and present a pleasing appearance.

The superstructure of each span consists of 12 pre-cast Freyssinet pre-stressed concrete beams. The 10 inner beams are alike but the two outer ones carry a reinforced concrete plinth brought up to a height of 1 ft. above rail level to comply with Ministry of Transport requirements. The parapet is of pre-cast concrete posts with steel tubular handrailing; refuges are provided over each pier.

Pre-stressed Concrete Beams

The beams, of I-section, 16 in. × 2 ft. 2 in. deep, are of 1:1½:3 nominal mix concrete. Rubber Ductubes were used to form the ducts for the Freyssinet cables threaded through and pre-stressed after the concrete had been cured for 28 days. The female cones were cast in the ends of the beams, as also were the convex steel bearing plates. The reinforced concrete plinths were cast on the outer beams after the latter had been pre-stressed, and were cast in short lengths with ¼-in. gaps between so as to avoid any chance of the reinforced concrete acting as part of the load-carrying beams.

There are five Freyssinet cables in each beam; each cable consists of twelve



New viaduct at Barmouth, Western Region, prior to the completion of the parapets and refuges. The viaduct replaces a former structure of twelve timber spans on timber piles



Two 12-ton steam travelling cranes lifting an outer beam into position on the new viaduct at Barmouth, Western Region

0.2 in. dia. wires and each was stressed to a load of 23 tons. On completion of the pre-stressing the ducts were filled with grout forced in under a pressure of 30 lb. per sq. in. and the ends of the cables after the surplus wires had been cut off were encased in concrete. Two mild steel bars, 1 in. dia., were cast in near the end of each beam and protruded above the top surface for lifting. The concrete in the beams is of the high quality necessary for pre-stressed work and the cube strengths at 21 days after casting varied between 7,500 and 8,896 lb. per sq. in.

Loading Tests on Beams

In addition to the cube tests on the concrete, 25 per cent. of the beams were subjected to loading tests in the Western Region testing plant at Taunton. Supported on the bearings, each beam under test was loaded at two points near the centre. The deflections were recorded and the surface on the underside was examined with a Brinell microscope for the detection of any cracks. The loads applied by hydraulic jacks, fitted with pressure gauges, produced stresses equivalent to (a) the full design load including impact allowance; and (b) the design load plus 50 per cent. over and above the live load including impact allowance. The central deflections, measured with a dial gauge, did not exceed 0.42 in. under (a) and 0.63 in. under (b). No cracks were detected on the underside of any of the beams.

The bridge is designed to carry Bridge Stress Committee (1928) loadings A, B, & C, with a maximum speed of 3 revolutions per second (the location being such that speeds will never exceed

30 m.p.h.); and, after transverse post-tensioning, each beam is designed to carry an equal share of the load. Under these conditions the compressive stress produced by pre-stressing will be reduced to nil on the undersides of the beams and the theoretical deflection at the centre would be 0.50 in.

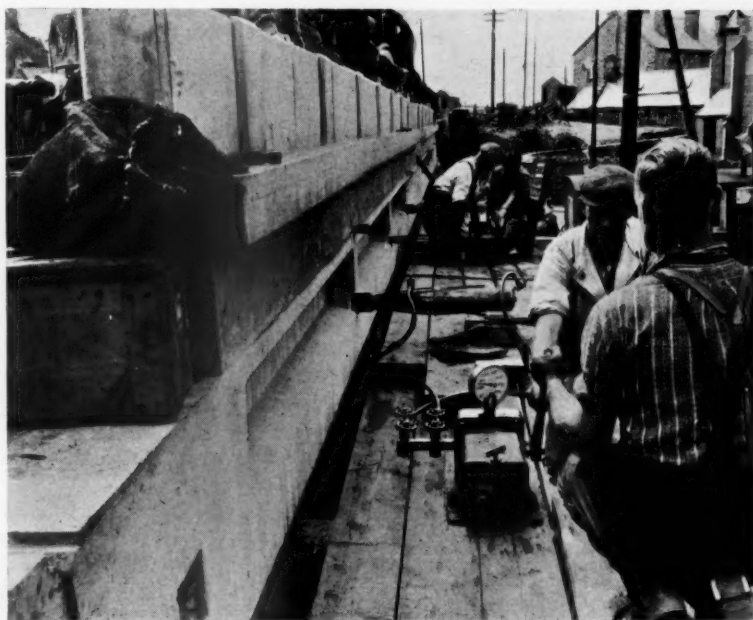
The new piers, located between the timber bents of the old viaduct, were

completed up to the tops of the pillars. The superstructure was erected during two week-end occupations, each of 30 hr. duration on July 19-20 and 26-27. Work started from the Barmouth Junction end, the superstructure of the old timber viaduct being removed and three new spans erected during each weekend.

Previously all the beams and the concrete crossheads had been unloaded on the beach alongside. Two 12-ton steam travelling cranes were used to dismantle the old timberwork and to lift the crossheads and the beams into position. The heaviest lift for a single crane was a crosshead weighing 10 tons; the beams handled by the two cranes weighed $6\frac{1}{2}$ tons for the inner ones and $13\frac{1}{2}$ tons for outer ones. Holes in the beams left for the transversal post-tensioning cables—five in each span—were used to pass mild steel bars through; and with nuts screwed up on the ends of these bars, the twelve beams in each span were brought up tight together as a temporary measure.

Laying of Temporary Track

After the erection of all 12 beams in each span a temporary track was laid on so that the crane could advance along the bridge towards the next span. The sleepers of this track were laid directly on the concrete beams, the inner six of which carried the load. After the erection of the first three spans, the intervening space between the third pier and the end of the remaining part of the timber bridge was spanned with timber beams. The speed of trains was restricted to not more than 5 m.p.h. until the spans had been fully post-tensioned, the parapets and refuges completed, and the permanent ballasted track had been laid.



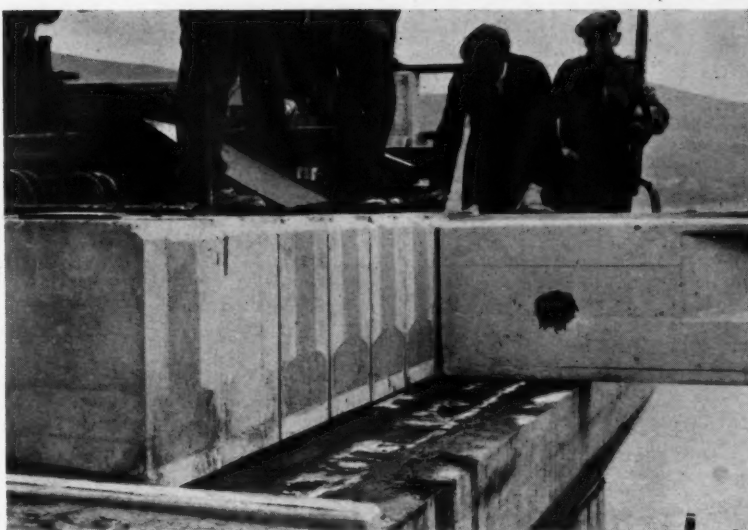
Transverse post-tensioning of one of the spans, with cables stressed to a load of 27 tons

The five cables for post-tensioning were each stressed to a load of 27 tons. This work was carried out between trains during the days immediately following the weekend occupations. Because the sides of the beams could not be made with such accuracy that perfect contact could be ensured throughout their length, small pieces of bituminous sheeting were inserted between them at the points where the post-tensioning cables were to be passed through.

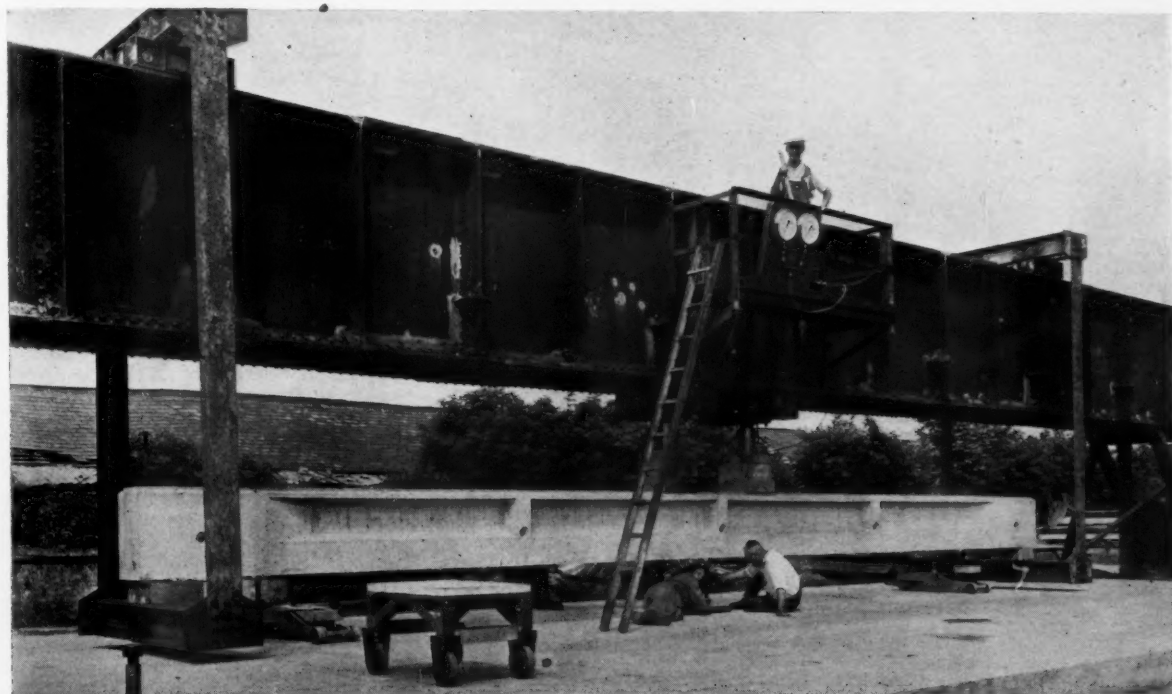
This sheeting, together also with a liberal coating of Themac compound around the holes, was used to seal the joints between the beams to prevent the grout from running out when the post-tensioning cables were finally grouted in after stressing.

Water Proofing and Drainage

Recesses were provided on the top edges of the beams and, after completion of the post-tensioning, the joints were caulked with hemp run in with hot-poured Ple-astic compound. This waterproofing was then covered with



View of crosshead showing concave steel bedplates and, on left, six of the twelve beams of a completed span



Testing one of the beams for the Barmouth Viaduct in the concrete depot at Taunton; 25 per cent. of the beams were subjected to these loading tests at the depot

$\frac{3}{4}$ -in. thick pre-cast concrete tiles as a protection. There is no overall waterproofing. Provision for drainage has been made with $1\frac{1}{2}$ -in. bore pipes cast in the side plinths.

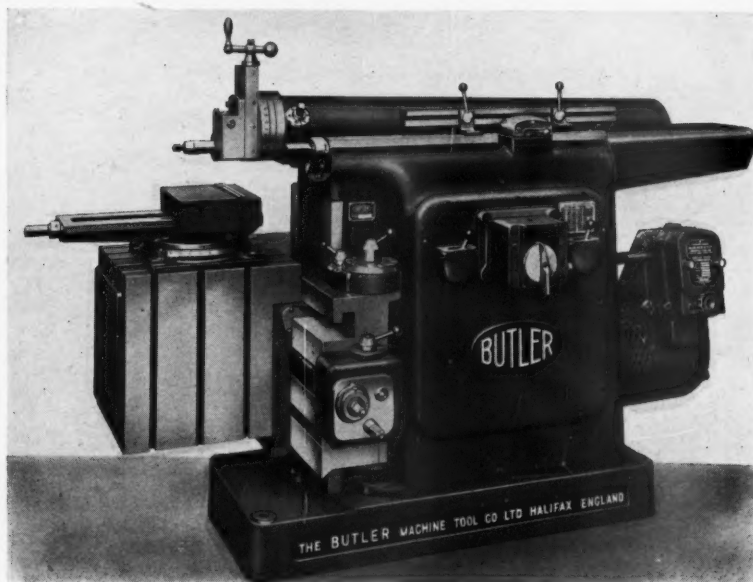
The new viaduct was designed in accordance with the British Standard Code of Practice C.P. 114 (1948) and the drawings were prepared at Paddington under the direction of Mr. M. G. R. Smith, Civil Engineer, Western Region. The contractor, who made the founda-

tions and built the piers up to the level at the tops of the pillars and the abutment at the Barmouth Junction end, was D. Davies Brothers, Barmouth. The pre-cast concrete facing blocks on the piers were made by the Welshpool Concrete & Construction Co. Ltd. The crossheads and the superstructure were cast in the Western Region Concrete Depot at Taunton. The erection work was carried out by the staff of the District Engineer at Oswestry.

BISLEY BRANCH RAIL TOUR.—On Saturday, November 22, the Railway Correspondence & Travel Society is proposing to run a special train over the Bisley branch, Southern Region. This will be the last passenger train to use the branch, as the track is shortly due to be lifted. It is hoped to use an ex-L.S.W.R. "0395" class 0-6-0 from Waterloo to Brookwood and back. In order to gauge the support for the trip, all interested persons should notify on a postcard to Mr. A. E. Hurst, 295, Portswood Road, Southampton.

International Machine Tool Exhibition at Olympia—1

A comprehensive display of equipment, including lathes, milling machines, power presses, heat-treatment plant, and measuring instruments



Butler 18 in. stroke shaper, with hydraulic control

THE seventh Machine Tool Exhibition organised by the Machine Tool Trades Association, the President of which is Mr. Robert W. Asquith, opened at Olympia on Wednesday last, and will remain open until Saturday, October 4. This important event, the first of its kind to be held in London since 1948, is international in scope, and provides exceptional opportunity to compare the most modern British, Continental, and American machine tools and equipment, from which it will be seen that British designers in no way lag behind.

Railway mechanical engineers and the locomotive manufacturing industry are among those keenly interested in the operation of machine tools and while railway workshops and the locomotive industry are equipped with certain special purpose machines, by far the greater number of machine tools is applicable to the engineering industry as a whole.

The provision of compressed air clamping, hydraulic equipment, and improved cutting tools has increased productive capacity considerably, and visitors to the exhibition will be given the

opportunity to witness demonstrations under actual production conditions. The exhibits cover a wide range, and include machine tools of varied types, measuring and testing equipment, gauges, presses, power hammers, heat treatment plant, woodworking machinery, and engineers' small tools.

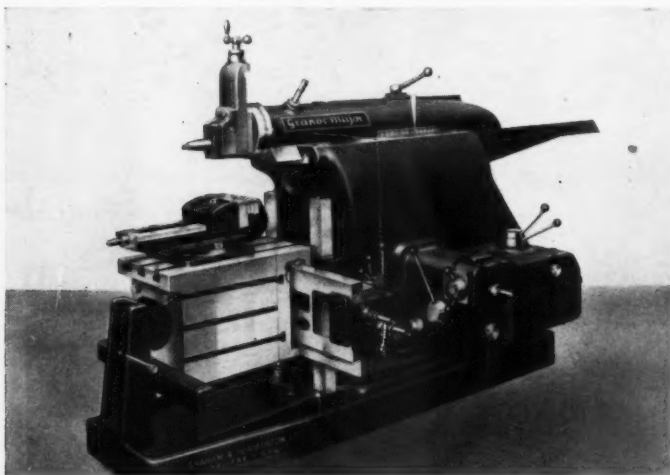
Machine Tool Exhibits

The Butler Machine Tool Co., Ltd., is exhibiting a number of shaping and slotting machines of different types, among which is the Butler hydraulic, 18 in. stroke shaper. This machine is the result of several years experimenting and is said to be one of the most up-to-date hydraulic machines of its type. This type of drive is somewhat more expensive than the conventional geared drive, but it has the advantages of simplicity of control, a stepless speed control, and a high return speed on slow cutting speeds, and provides a natural protection against damage.

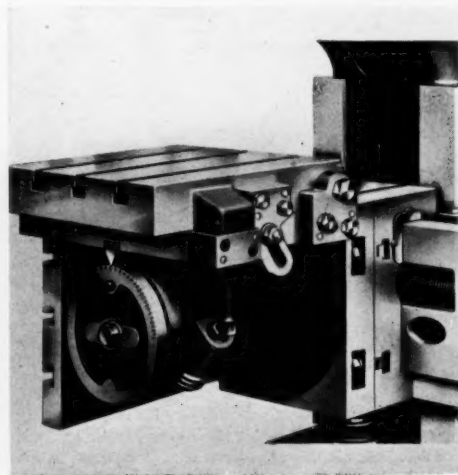
A 7½ h.p. constant-speed motor, flange mounted to the back of the machine, drives two constant-delivery pumps, one for the ram drive and one for the feed. Their speed is controlled from a dial calibrated to show the speed selected, and can be varied from 0 to 130 ft. a min., the return speed ratio being 2½ to 1 on the low range and 1½ to 1 on the high range.

The change from one range to another is effected by a finger-light lever operating the main valve through a pilot valve. Starting and stopping of the ram is controlled by adjustable dogs on the ram. New designs of saddle and apron slide eliminate the necessity for a table support, and the table size has been increased beyond that usually fitted to the 18 in. size shaper.

A variable-throw hydraulic piston



Granor-Major 26-in. shaping machine; drive is through vee belts and multi-disc friction clutch



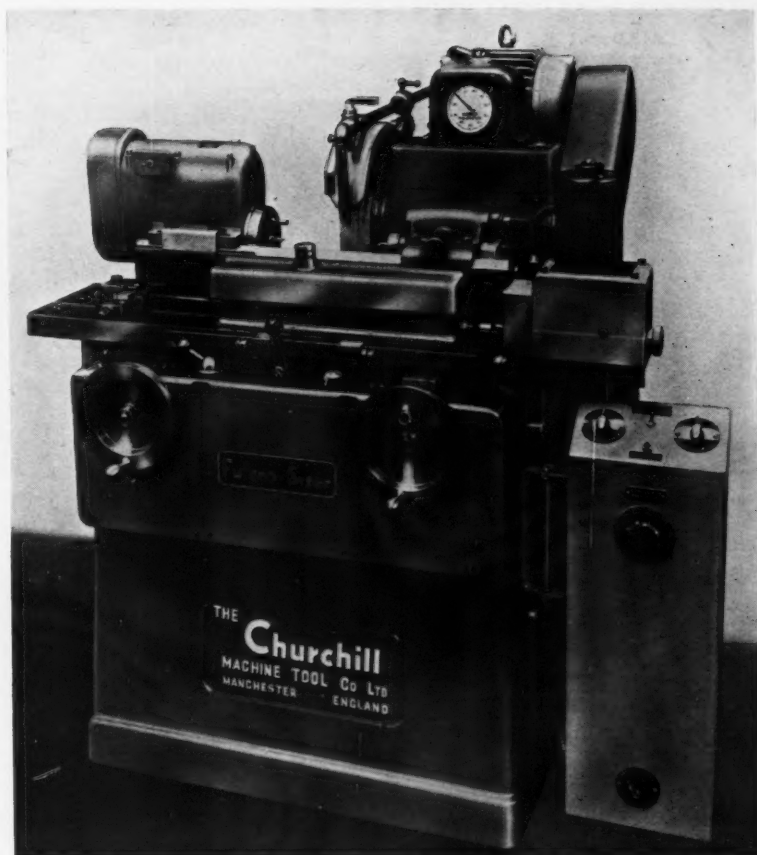
Swivel and tilting table of the Granor-Major shaping machine

operates the feed ratchet, the effective movement being controlled by a calibrated dial on the saddle, and feed can be applied to the table either horizontally or vertically; micrometer collars are fitted to all feed screws. The tool-box is of steel, and the automatic feed to the ram is made from the hydraulic feed pump. The Butler 18 in. and 26 in. Super Shapers have been redesigned, the original patented cast-iron link being replaced by two steel rods suspended from the ram trunnion, providing more than twice the bearing area than originally. Ram adjustment can also be made when in motion or at rest; a new design of saddle and apron slide is used which does not require a table support.

Morrison, Marshall & Hill Limited in conjunction with Graham & Normanton Limited, is showing a Granor-Major 26 in. shaping machine of new design. The drive is by a 10 h.p. motor, through vee belts and multi-disc friction clutch. The machine has a table of box section, with tee slots in the top and both vertical faces, and is detachable from its apron, which also has tee slots to allow for large castings to be bolted to the apron face.

The table is traversed in the vertical and horizontal direction mechanically, giving eight variations of feed per ram stroke, horizontally from 0.101 in. to 0.160 in., and vertically from 0.004 in. to 0.063 in.; feeds are adjustable while the machine is in motion. The tool head of solid design is arranged to swivel through an arc of 45 deg. on either side of zero, and can be raised or lowered by mechanical or hand feed.

Rapid power traverse is provided and lubrication is either forced or by the single shot method. The swivel and tilting table is arranged to swivel through 90 deg. each side of the



Churchill "OW" Fulcro-Sizer, fitted with hydraulic control

vertical and to tilt at any angle from 0 deg. to 15 deg. and can be locked in any position. A Granor double travers-

ing head shaping machine will also be exhibited. This machine has a 26 in. stroke, a 10 ft. bed, and is driven by two 10 h.p. motors.

Grinding Machines

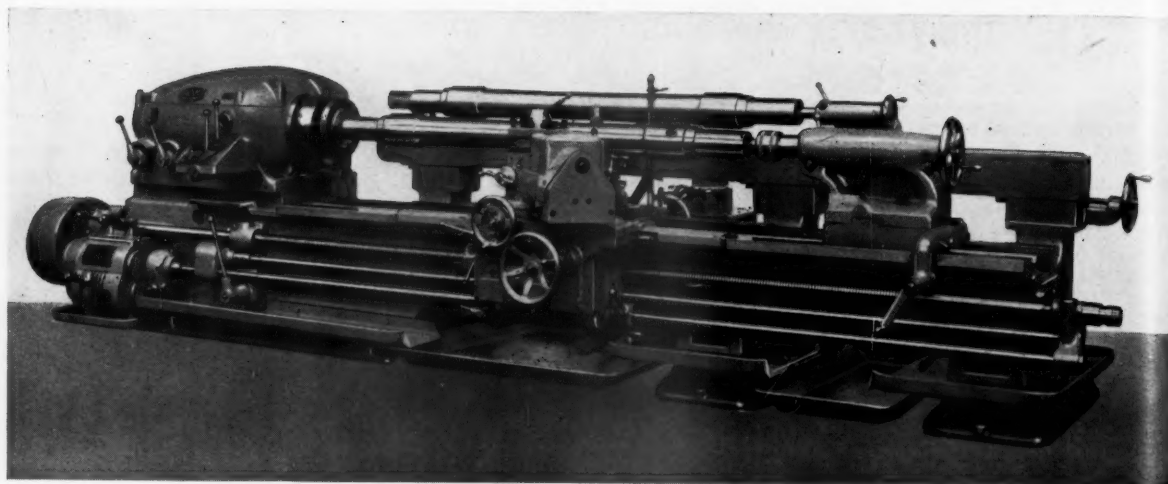
Several designs of internal and external grinding machines are included in the exhibits of the Churchill Machine Tool Co. Ltd., among which is the model "OW," Fulcro-Sizer. The machine is a fully automatic plain grinder, specially designed for external grinding of small-diameter components to extremely close limits, such as those required for scientific instruments and diesel injection equipment.

The machine has a maximum grinding capacity of 4 in. dia. and 12 in., between centres. Hydraulic control is applied to the tail stock, the barrel carrying the work centre is rack propelled forward by a compression spring and withdrawn through the medium of a hydraulic piston. The cylinder carrying the hydraulic piston is interconnected with the hydraulic cylinder operating the Fulcro-Sizer motion of the table. The machine operates on a fully-automatic cycle using the principle of feeding the work to the grinding wheel. Automatic sizing to plus or minus 0.00005 in. is possible on long runs of components.

Special arrangements have been made



Naxos-Union "FR. 750" rotary table surface grinding machine



Lang 20/24 in. swing centre lathe with profile attachment

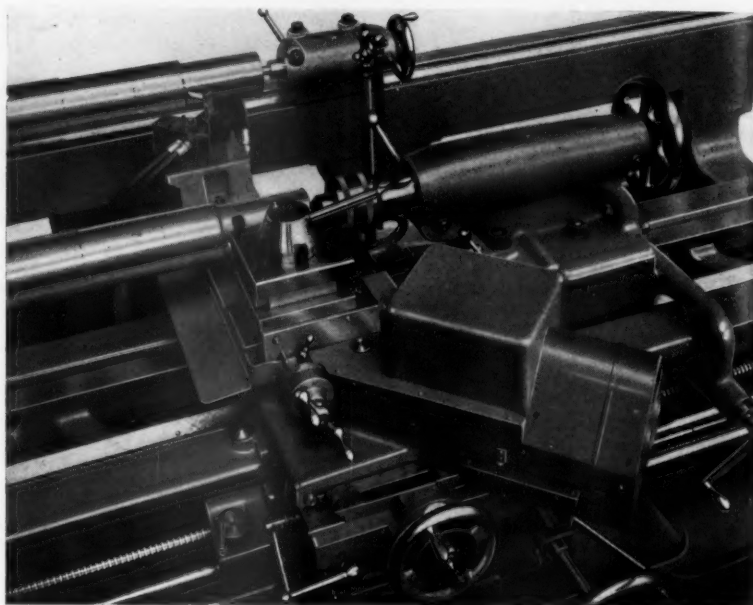
in this new design of Fulcro-Sizer mechanism to ensure that the cycle time does not vary due to the heating of the hydraulic oil. An electrically-operated metering valve mounted above the Fulcro-Sizer control unit controls the exhaust unit and maintains a constant speed of cycle time. A time cycle dial is fitted to indicate the cycle time. The dial can be locked to prevent any cycle change after initial setting.

Wickman Limited is also exhibiting, as agent, a series of surface, internal, and external grinding machines, including a Naxos-Union FR. 750 rotary surface grinder, dia. of table 750 mm., maximum work height 300 mm., and a RU. 300/1000 universal grinder, with a swing of 300 mm., as well as a series of grinders manufactured by Ulsunda Verkstader Aktiebolag automatic sizing internal grinding machine, type UHM-195. This latter machine is all-hydraulic in operation, with a capacity up to 200 mm. internal dia.

Automatic sizing of holes during grinding is by means of roughing and finishing gauges; the gauges are hydraulically withdrawn. Hydraulic clamping of the work in the chuck is also provided. Wickman Limited is also exhibiting a number of lapping and grinding machines of their own manufacture, including the 6 in., 8 in., and 14 in. types, together with an optical profile grinder.

Turret and Centre Lathes

John Lang & Sons Ltd. is exhibiting a series of hexagon turret and centre lathes, a feature of which is the 20/24 in. swing centre lathe arranged with hydraulic copy turning attachment. Twelve speeds are provided in a range of 15.4 to 820 r.p.m., with 28 feeds of 12 to 168 cuts per in. The lathe will take 5 ft. 4 in. between centres, with a swing over saddle of 9 in. Speed control is by gate change levers, and the main drive is through multi-plate friction clutches, operated from both headstock and operators' positions; a



Profile attachment of the Lang centre lathe showing the mechanism

Ferodo-lined brake is provided to bring the spindle to rest.

The spindle is of large diameter mounted at the front end in a patent pre-loaded spherical roller bearing to take radial and end loads, and at the rear is a double row plain roller bearing. The machine is fitted with a hydraulic profiling equipment, enabling stepped and tapered shafts to be turned at one setting. A slide is arranged on the saddle at 45 deg. to the axis of the lathe, and operated by a hydraulic cylinder. The movement of this cylinder is controlled by a retraction valve, which is superseded by a sensitive stylus when the stylus comes into contact with the model to be copied.

The model is mounted between centres at the rear of the machine. The centres can be moved longitudinally,

separately or together, and adjusted for parallel to give easy and accurate setting. The distance from the tool to the stylus is adjustable. Roughing can be applied by the saddle screw until the stylus is put into operation for the final cut.

(To be continued)

ALUMINIUM ALLOYS DATA.—The revised specification data sheets of aluminium casting alloys for general engineering purposes issued by Alar Limited are now available in condensed form mounted on both sides of a card suitable for hanging on the wall. Information tabulated in a form convenient for rapid reference includes chemical composition, properties, casting characteristics, and trade names. Copies are available from the offices of Alar Limited, 3, Albemarle Street, London, W.1.

RAILWAY NEWS SECTION

PERSONAL

Mr. C. A. Pizzorno has been appointed Administrator (General Manager) of the General San Martín Railway, Argentina.

Mr. Arne Sjöberg, Chief Research Economist to the Swedish State Railway Board, has been appointed to the new post of Director of Finance & Economics to the Board, from October 1.

The Minister of Transport has extended the term of office of the members of the Transport Users' Consultative Committees for Wales and for Scotland for a further period until July 31, 1953.

Mr. George M. Dunbar has been appointed to the board of Directors of John Fowler & Co. (Leeds) Ltd. He joined the company in 1950 as Commercial Manager.

LONDON MIDLAND REGION APPOINTMENTS

The following appointments are announced by British Railways, London Midland Region:—

Mr. H. Pargiter, Secretary, Regional Investigation (Branch Lines & Stations), Commercial Superintendent's Office, Euston, to be Passenger Assistant to District Commercial Superintendent, Barrow-in-Furness.

Mr. R. W. Ellson, Chief Commercial Clerk, District Commercial Superintendent's Office, Leicester, to be Passenger Assistant to District Commercial Superintendent, Stoke-on-Trent.

Mr. G. Pearson, Railway Service Representative, District Goods Superintendent's Office, Bolton, to be Goods Agent, Skipton.

WESTERN AUSTRALIAN GOVERNMENT RAILWAYS

An Industrial & Staff Branch, under an Industrial & Staff Manager, has recently been created by the Western Australian Government Railways to deal with railway ambulance, institute and various other welfare work. These functions were formerly handled by the Industrial & Staff Agent in direct contact with the Commission, though all correspondence and papers were handled *via* the Secretary for Railways. The Industrial & Staff Manager is now given a delegation of the Commission's authority and pressure on the Secretary's Department has been reduced. Mr. J. A. Faulkner, formerly Industrial & Staff Agent, has been appointed Industrial & Staff Manager.

FUNERAL OF SIR BRUCE THOMAS

The funeral of Sir Bruce Thomas, Q.C., President, Railway Rates Tribunal, 1932-48, and President, Transport Tribunal, 1948-50, who died on September 5, took place at Woking Crematorium on September 10. The Rev. H. G. French officiated. In addition to family mourners, those present included:—

Lord Hurcomb, Chairman, British Transport Commission; Messrs. E. W. Godfrey, representing Mr. A. T. Lennox-Boyd, Minister of Transport; Hubert Hull, President, Transport Tribunal; J. C. Poole and A. E. Sewell, Members, Transport Tribunal; E. F. M. Maxwell, Registrar, Transport Tribunal; M. T. Howard-Williams, Senior Solicitor Assistant, British Transport Commission; T. J. Lynch, Secretary, Railway Clearing House; A. B. B. Valentine, Member, London Transport Executive; F. O. Bates, Assistant Solicitor, British Transport Commission; H. E. Parkes, retired Member, Transport Tribunal; T. E. Argile, Chief Commercial Manager, L.M.S.R., 1938-43, and afterwards a Member of the Transport Tribunal.

Mr. C. G. C. Wayne, Deputy General Manager, Tasmanian Government Railways, who has been appointed an Associate Commissioner of the Tasmanian Transport Commission & General Manager of Railways, is a former L.N.E.R. traffic apprentice. He was born in Derbyshire and graduated at King's College and the School of Economics & Political Science, London University, obtaining first class passes in examinations on railway subjects and a diploma for proficiency in speaking and writing Chinese. After a further period of training with

Mr. Pierre Tissier, President, French National Railways, was among those on board the French Line ss. *Ile de France*, when it left Southampton for New York on September 16.

Mr. R. Beavan, London Representative of the Railway Signal Co. Ltd., has retired after 55 years' service with that company. He joined the company's works in Liverpool in 1897 and was transferred to London in 1908. Mr. Beavan was for many years Chief Draughtsman to the company, and, following reorganisation involving transfer



Mr. C. G. C. Wayne

Appointed an Associate Commissioner of Transport Commission & General Manager of Railways, Tasmania

the Chicago, Milwaukee, St. Paul & Pacific Railroad, U.S.A., he joined the Shanghai-Nanking Railway in 1925 and was appointed Assistant to the Traffic Manager. Later, Mr. Wayne accepted a position with the Buenos Ayres Western Railway and was subsequently promoted to Sectional Traffic and Operating Superintendent. On the amalgamation of this Railway with the Buenos Ayres Great Southern, Mr. Wayne was appointed Chief of Staff and later became Divisional Assistant in charge of movement on the Buenos Ayres Western Railway. In 1947 he was promoted to the position of Assistant Traffic Manager of both Railways. In 1949, Mr. Wayne was appointed Traffic Advisory Officer of the Tasmanian Government Railways and in December last occupied the position of Deputy General Manager.

Mr. Henry Nimmo, who has been Chairman of the General Council of the Engineers' Guild during the past two years, has been elected President, in succession to Mr. Robert Chalmers, whose term of office expires on September 30. Mr. Nimmo is Chairman of the Southern Electricity Board and a Part-time Member of the British Electricity Authority.

of the Drawing Office to Liverpool, was responsible for the London Sales side of the business up to the time of his retirement. He is succeeded by Mr. E. J. Beavan.

Mr. T. R. B. Sanders has been appointed Engineering Adviser to the British Standards Institution. In his new appointment he will give first priority to furthering the British part of the current U.S.A.-British-Canadian programme for the unification of engineering standards.

EASTERN REGION STAFF CHANGES

The following staff changes have been announced by the Eastern Region of British Railways:—

Mr. J. Bonham Carter, Assistant District Operating Superintendent, Nottingham (Eastern Area), London Midland Region, to be District Operating Superintendent, Norwich, in succession to Mr. H. G. Rampling, who has retired.

Mr. W. D. Dixon, Locomotive Shedmaster, Immingham, to be Assistant District Motive Power Superintendent, Stratford.

Mr. W. O. Reynolds, Assistant District Operating Superintendent, Doncaster, to be District Operating Superintendent (Southend District), Fenchurch Street.



Mr. Philip L. Mathewson

Appointed Chief of Research,
Canadian National Railways



Mr. C. A. Dove

Appointed General Manager (Ports),
Nigeria



The late Mr. H. E. Horne

Assistant Chief Commercial Manager,
L.M.S.R., 1939-42

Mr. Philip L. Mathewson, Transportation Engineer, Canadian National Railways, who, as recorded in our August 1 issue, has been appointed Chief of Research for the system, is a native of New Westminster, British Columbia, and graduated from the University of British Columbia in 1927 with a B.Sc. degree. He joined the C.N.R. at Toronto in 1930 as an electrical inspector in the Motive Power Department and moved to Montreal in 1937 as Assistant Engineer, Chief Electrical Engineer's Office. He was promoted to Research Engineer, Department of Research & Development, in 1943 and to Transportation Engineer in the Operation Department in 1946. Mr. Mathewson recently won the Ross Medal awarded annually by the Engineering Institute of Canada for the best paper on an electrical subject, with his treatise on the application of diesel-electric power.

We regret to record the death on September 10, in his eighty-first year, of Mr. J. W. Kidd, a former Director & General Manager of Metropolitan - Cammell Carriage & Wagon Co. Ltd.

The United States Defense Transport Administration has announced the appointment of Messrs. Wayne G. Brown and Samuel E. Emmons to survey surface transport, warehousing and storage, and port facilities in Alaska.

Mr. J. W. Massey, Chief London Inspector to Messrs. Livesey & Henderson, has retired. He was born in Rochdale in 1872 and educated in London and Birmingham. In 1889 he joined Tangyes Limited, where he worked until 1893, and he then spent a few months with Kitson & Co. Ltd. at Leeds. Mr. Massey joined Messrs. Livesey, Son & Henderson in 1893 and acted as Assistant Inspector in Birmingham, under his father, Mr. J. P. Massey, until 1899. Mr. J. W. Massey has been Chief London Inspector from 1899, except for a period of 15 months in 1911-12, when he was inspecting for his firm in Belgium. Mr. Massey's father, Mr. J. P. Massey, joined Messrs. James Livesey & Son in 1885.

Mr. C. A. Dove, M.B.E., M.Inst.T., Traffic Superintendent, the Tees Conservancy Commissioners, who, as recorded in our issue of August 29, has been appointed General Manager (Ports), Nigeria, began his career in the Port of London Authority, where he held appointments in the Royal Docks, Stores Manager's, the Dock and Traffic Manager's, the General Manager's, and the Secretary's Offices. He was subsequently appointed Assistant Port Director, Calcutta. In 1947, Mr. Dove was appointed Assistant to the General Manager, Tees Conservancy Commissioners, and was appointed Traffic Superintendent in 1950. During the war of 1939-45, he held the rank of Lt.-Colonel in the Royal Engineers, Transportation and Movements, occupying various appointments in the Middle East and India, including those of A.D.Tn (Ports), Middle East Forces, and A.Q.M.G. (Movements) on the staff of the Embarkation Commandant, Calcutta. He has held the rank of Lt.-Colonel in the Royal Engineers Supplementary Reserve (Staff Increment). Besides his present Membership of the Institute of Transport, Mr. Dove was Chairman of the Metropolitan Graduate & Student Society in 1935-36. He is joint author of "Port Operation and Administration."

Mr. K. G. Leach has been appointed Manager (Plant & Apparatus, South-Western Area, London District), Sub-Office, Bristol, British Thomson-Houston Co. Ltd.

Mr. G. A. T. Burdett has joined Holograph Limited as Publicity Manager, in succession to Mr. R. J. W. Briddon, who now represents the company in the South Western Area.

Mr. Allyn O. Seymour, General Tourist Agent of the Canadian Pacific Railway, has retired, and has been succeeded by Mr. D. McD. Hains.

The Ministry of Materials has announced that Mr. Philip G. Smith of Bassett Smith & Co. Ltd., will be appointed Government Broker from October 1 for all sales of lead on the London Metal Exchange from Ministry stocks.

We regret to record the death on September 13, at the age of 76, of Mr. H. E. Horne, Assistant Chief Commercial Manager, L.M.S.R., 1939-42. He joined the Midland Railway as a junior clerk at Armley (Leeds) in December, 1888. After experience in various capacities at Newlay and Horsforth, and at Newark-on-Trent, he went in 1896 to Derby, where he was subsequently appointed Relief Clerk. He was appointed Stationmaster at Harpenden in 1899, became Stationmaster at Cheltenham in 1907, and for the greater part of 1909 was at Derby with Mr. (afterwards Sir) Cecil Paget, the then General Superintendent, in connection with special work. In December, 1909, he went as Stationmaster to Leeds (Wellington), a post which he held until October, 1916, when he was transferred to Derby as Assistant Superintendent of Passenger Services. Mr. Horne occupied this position at the formation of the L.M.S.R. in January, 1923, when he was appointed Assistant for Passenger Services to the Chief General Superintendent. In June, 1929, he was appointed Assistant General Superintendent (Passenger Commercial); Assistant Passenger Manager in October, 1931; and in October, 1932, Assistant (Passenger) to the Chief Commercial Manager. In August, 1935, Mr. Horne was appointed Assistant Chief Commercial Manager (Passenger), Euston, and he became Assistant Chief Commercial Manager in 1939, after acting in this capacity from 1938. He retired in 1942. While at Derby as Assistant to the General Superintendent of Passenger Services, Midland Railway, Mr. Horne was largely responsible for the introduction and subsequent organisation of the system of passenger train control.

Mr. Gilbert S. Hill, Welfare Officer, London Midland Region, recently was presented by the members of the Standing Committee of Railway Ambulance Centre Representatives with a silver entree dish, following his relinquishment of the Chairmanship of that body, which he had held continuously since 1945. In making the presentation, Mr. P. Anstey, the succeeding Chairman, thanked Mr. Hill for all the guidance and help he had given.

Signal Engineers' Visit to Westinghouse Works

Inspection of apparatus under manufacture for home and abroad

On September 13, by the courtesy of Mr. Donald F. Brown, Managing Director, Westinghouse Brake & Signal Co. Ltd., members of the Institution of Railway Signal Engineers visited that company's extensive works at Chippenham, Wilts. The party, numbering about 140, was led by the President, Mr. T. S. Lascelles, who was supported by:—

Messrs. T. Austin and J. H. Fraser, Vice-Presidents; S. Williams and F. Horler, Past Presidents; N. Marshall, F. G. Hathaway, W. Owen, F. B. Egginton, M. Le Sueur, D. G. Shipp, A. L. Mills, R. A. Green, Members of Council; Mr. G. J. Dickin, Honorary General Secretary; and Mr. B. Reynolds, Honorary Treasurer.

The Honorary Secretary of the General Purposes Committee, which made the arrangements, Mr. W. H. Challis, was regrettably prevented from attending. The majority of members travelled by train from Paddington and were accompanied by Mr. T. J. Aldridge, Manager of the Signal & Colliery Division of the company. During the journey an illustrated folder describing the works was distributed.

On arrival the party was welcomed by Mr. Donald F. Brown, accompanied by Mr. H. A. Cruse, Director & Works Manager, and Mr. N. G. Cadman, Deputy Works Manager, with various departmental and production engineers and assistants, acting as guides for the tour of the premises.

Lunch was served in the works canteen, at which Mr. Brown presided and expressed the pleasure he and his colleagues felt at the visit, which he trusted would be found enjoyable and informative. The products to be seen were very varied and the works staff were hoping to make the afternoon interesting to all. They felt much gratified that the Institution had expressed a wish to inspect the factory.

Mr. T. S. Lascelles, replying, expressed the thanks of the Council and members for the facilities afforded to them, and for the generous hospitality with which they had been welcomed there. For nearly 60 years signalling apparatus had been going from Chippenham to all parts of the world, but now brakes, rectifiers and many other engineering products were made there and the premises had much expanded. Many of the Company's engineers had been members of the Institution and some had been, and others still were, members of its Council, while two, Mr. H. M. Proud and the late Mr. R. S. Griffiths, had held the chair of it and served it with great ability and conspicuous devotion. This must add to the pleasure all felt at being there that day.

Mr. T. Austin, Senior Vice-President, expressed the thanks of all to the committee and its Secretary, Mr. Challis, as well as to the Westinghouse staff concerned in organising the visit, including the canteen staff, who had devoted their Saturday to waiting on the visitors.

Mr. H. A. Cruse, as Mayor of Chippenham for a second term of office, welcomed the members on behalf of the town, of the activities of which the works formed a noteworthy part, and recalled the development of its municipal life which he had witnessed in the course of his 50 years' service with the company and its predecessors.

Mr. N. G. Cadman then outlined the

history of the premises, established in 1895 by Evans O'Donnell & Company, which now occupied 20 acres and employed some 3,300 people; he also mentioned the chief sections of the works and the items of particular interest which the visitors would see.

The tour of inspection covered the machine shop, tool room, plastics department, electro-plating shop, laboratory, signal assembly shops, both mechanical and electrical; signal test room; the rectifier, transformer, coil winding and brake assembly shops; and brake test room. Among items of special interest were the high frequency treatment of plastic mouldings, the modern layout of the plating shop, with all service supplies run in subways and fumes cleared from vats by air blast without using cowls, the materials reception testing in the laboratory, including ultra-violet light condenser leakage tests, and detection of faults and punctures in sheet insulation and enamelled wire; also testing of coloured glasses and lenses. In the signal shops were seen considerable quantities of mechanical signalling and

colliery equipment, a centralised traffic control panel for a 100-mile section in Australia, constructed on the unit pre-wired principle, and a push-button remote control machine for actuating air operated levers, under construction for Ealing Broadway Station, London Transport Executive.

In the relay shop were seen various types of signalling relays and their numerous components, while in the signal test room an electro-oil level crossing gate drive was shown under load, also different designs of electric point machines and electro-pneumatic point mechanisms, including the modern type "CP" with cut-off action; together with coded track circuit equipment and a marshalling yard panel for South America of especially neat design, complete with relay rack assemblies; a new plug-in unit component type searchlight signal, and some Neale's tablet and ball token instruments. The visitors then were shown some large transformer-rectifier sets for industrial purposes and an anti-corrosion electric equipment for safeguarding oil pipe lines against damage. After brake assembly had been examined, the running-in of compressors and exhausters was inspected.

The party was then entertained to tea, with Mr. N. G. Cadman presiding, and returned to London by the 6.10 p.m. train.

London Transport First "RF" Bus Placed in Service

Design incorporating parts interchangeable with "RT" vehicles

The first London Transport "RF" type single-deck bus went into service on September 11 on Central Area route 210 (Finsbury Park to Golders Green).

Of the same basic design as the post-war Green Line coach, with an A.E.C. Regal Mk. IV underfloor-engine chassis and entrance forward of the front axle, it is 30 ft. long by 7 ft. 6 in. wide, with 41 standard bus seats. In general layout and appearance the all-metal M.C.W. body of the stressed inner-skin type, follows the lines of the "505" bus introduced in 1936, but presents a modern styling. Seven rubber-glazed windows are provided on each side, four being of the quarter-drop type. Route indicator boxes are in the same position as on the Green Line coach, but an additional route number is located above the entrance.

The power unit is the 125 b.h.p. A.E.C.

underfloor diesel engine, removal of which for overhaul purposes is facilitated by a built-in jack. Clean air for the engine is ensured by locating the intake above the driver's head; the radiator is under the floor forward of the front axle.

Standard "RT" components have been incorporated as far as practicable, so that most working parts in the transmission and axles are interchangeable with those of the post-war double-deck fleet; servicing thus is facilitated and the range of spares kept to a minimum. "RT" practice is also followed in the 16 ft. 4 in. wheelbase and the adoption of fluid flywheel, four-speed air-actuated, preselective gearbox with steering column control, and compressed-air braking.

The new bus is the first of 225 which will gradually replace the prewar "T," "LT," and "Q" types now operating in the Cen-



London Transport "RF" Bus for Central Area services, to replace prewar "T," "LT," and "Q" types

tral Area. A start then will be made on replacing the prewar single-deckers in the country bus fleet with "RF" buses. For use in the Country Area, however, the vehicles will have power-operated doors similar to the Green Line coach model.

At the end of this replacement programme, the whole of the London Transport Executive single-deck fleet (except for a few 20-seaters) will consist of postwar types and thus will be in line with the double-deck fleet in comprising mainly vehicles of the most advanced design.

Heavy Summer Traffic on British Railways

During the period of the summer timetables, which ended on September 14, British Railways recorded some extremely heavy carryings. On the twelve summer Saturdays up to September 6, 6,519 long-distance passenger trains which left the London termini carried 2,560,888 passengers. During the August Bank Holiday weekend alone, 86,728 trains were run. Despite currency restrictions, 1,334,125 passengers were carried by the cross-Channel ships to and from the Continent, and 271,192 to and from the Channel Isles during the three months of June, July and August.

On Saturday, September 6, no fewer than 172,000 passengers travelled in 515 long-distance trains from the London termini—slightly more than last year. Despite variable weather, 114 special trains were used to convey 39,000 people to Blackpool, Morecambe, and Southend for the illuminations last weekend, and 116,000 passengers (nearly double last year's figure) travelled to and from Farnborough for the air display by the ordinary rail services and the 91 special trains which augmented them. At the close of Preston Guild Week, 50,000 people left the town by rail during four hours on the evening of Saturday, September 6, 37 special trains being run as well as the normal service.

Adequate services for late holiday travellers are still being provided and a full programme of excursion services continues.

French Winter Passenger Services

The main feature of the French National Railways winter passenger service, effective from October 5, is the accelerations in the South-Eastern Region resulting from completion of the Paris-Lyons electrification and from use south of Lyons of additional "241-P" class (4-8-2 type) steam locomotives, many of them released by electrification from their former duties. Some indication of the fast running in the new timetable over the Paris-Lyons electrified section was given in our issue of July 11.

Amongst many main-line accelerations in the South-Eastern Region is that of "Le Mistral," which will run through to and from Nice instead of terminating at Marseilles. Southbound, this train will be allowed 101 min. from Dijon to Lyons Perrache, which latter point will be reached in 4 hr. 15 min. from Paris, and Nice, 676 miles, in exactly 12 hr. The "Blue Train" will reach Nice in 13 hr. from Paris.

Railcar Feeder Services

The evening *rapide* (train 15, all classes), leaving Paris at 6.25 p.m., will be allowed 4 hr. 34 min. to Lyons, with four

stops. At Dijon it will give a railcar connection to Lausanne and Geneva via Vallorbe, the railcar covering the 92 miles from Dijon to Vallorbe in 119 min., with one stop, and including the ascent of the Jura; Lausanne is reached the same evening at 11.58 p.m., and Geneva 42 min. later, and a corresponding service leaves Geneva at 7.20 and Lausanne at 8.5 a.m., with connection by train 16 from Dijon due Paris 1.36 p.m. These connections are among a number of new feeder services worked by railcars and connecting with main-line ordinary trains, which appear in the winter timetable.

Budd Type Coaches

In the Eastern Region, increased traffic between Paris and Strasbourg has necessitated replacement of one pneumatic-tire steam-hauled express in either direction by one composed of Budd type stainless-steel coaches giving greater seating capacity. The pneumatic-tire sets thus released are to replace existing railcar sets between Paris and Basle. The best Paris-Strasbourg time is to be cut to 5 hr. 10 min. either way.

The retiming in the Northern Region of the southbound "Golden Arrow" to connect with the afternoon service from London via Folkestone/Calais, largely to enable one set to work between Paris and Calais, was the subject of editorial comment in our issue of August 15; the allowance from Calais Maritime to Paris remains 197 min. The best time from London to Paris will be 7 hr. 8 min., by the morning service via Dover/Calais.

There are no major alterations in Western or South-Western Region services.

Winter Services, Scottish Region

With the introduction of the winter timetable in the Scottish Region on September 15, the weekly mileage being run by passenger trains is slightly less than that operated last winter. The services for the winter 1952-53 are very similar to those of the 1951-52 winter timetable period, but improvements include the following accelerations.

The 7.35 p.m. (Saturdays only) train from Glasgow Buchanan Street to Aberdeen is retimed to arrive Aberdeen at 11.5 p.m., an acceleration of 15 min. The 10.5 a.m. train from Edinburgh Waverley to St. Pancras (serving also Galashiels, Melrose, St. Boswells, and Hawick) now runs non-stop from Nottingham to London and arrive St. Pancras at 8.45 p.m., an improvement of 41 min. (see our September 12 issue).

The "Mid-day Scot," 1.15 p.m. from Euston to Glasgow Central, maintains the timing introduced at the beginning of the summer, arriving at 9.35 p.m.—10 min. earlier than last winter. The "Thames-Clyde Express" from London to Glasgow leaves St. Pancras at 9.50 a.m., arriving St. Enoch at 7.55 p.m. as in the summer, a gain of 10 min. in the throughout timing.

In consequence of an extensive examination of the service between the Clyde Coast residential towns and Glasgow, a step towards the establishment of standard departure times has been introduced. Steamer departures from Dunoon are at 35 min. past the hour, and travel time is curtailed by about 15 min. on most services. Between town and coast, train departures from Glasgow Central are stabilised as far as possible at 10 min. past the hour, with overall travel time of 75 min. to Dunoon.

Exceptions to this arrangement are the early morning services in both directions.

On the Rothesay run via Wemyss Bay, most departures from Glasgow Central will be at 25 min. past the hour, and in the reverse direction most steamer departures from Rothesay will be at 45 min. past the hour.

During the winter period, Buchanan Street and St. Enoch Stations, Glasgow, will be closed on Sundays after September 28, and as from Sunday, October 5, Sunday train services from and to the city will be concentrated at Central and Queen Street Stations.

Southern Region Winter Services

In the Southern Region winter timetables which came into operation on Monday, September 15, the down "Atlantic Coast Express" (11 a.m. from Waterloo), which was accelerated this summer, will continue to reach Exeter at 2.5 p.m. with through coaches for Ilfracombe, Torrington, Bude, Padstow, Sidmouth, Exmouth and Plymouth. In the up direction the 3.40 p.m. arrival at Waterloo is 38 min. earlier than last winter.

The 9 a.m. from Waterloo for the West of England will arrive at Exeter at 1.8 p.m. 9 min. earlier than in summer. Through services between Birkenhead and Hastings and Margate and between York and Bournemouth, will be continued every weekday during the winter.

The winter services to the Continent operate as from October 5, and the most important change is a mid-day departure from London of the "Golden Arrow" all-Pullman service (see our August 15 issue). This will leave Victoria at 1 p.m. (2 p.m. until October 25), connecting with the Folkestone-Calais steamer. The new departure time will enable intending passengers to stay in London all morning, take lunch on the train, and dinner before arriving in Paris at 9.34 p.m.

Other Continental services during the winter months will operate daily via Dover-Calais, Dover-Dunkirk ("Night Ferry" sleeping car service), Newhaven-Dieppe, and Dover-Ostend. The Southampton-Havre service will operate on Mondays, Wednesdays and Fridays.

MODEL ENGINEER EXHIBITION.—Railway models will be an outstanding feature once again at the "Model Engineer" Exhibition, which this year is to be opened by the Duke of Edinburgh, at the New Royal Horticultural Hall, Westminster, on October 20. Competition models indicate the wide variety of interest in locomotives and the feeling of model engineers for the "old" liveries. Indications are that the new British Railways colours will not be seen on the competition stands at the exhibition. Among the models so far entered are: a 12-ft. model of the *Royal Scot*, which took four years to build and is valued at £1,500; and an 0-2-2 *Rocket* type, coal-fired, passenger hauling locomotive which although only 2 ft. long has hauled two adult passengers round a 660-ft. track. Rolling stock to be exhibited in the competitions include old-style G.W.R. suburban coaches, a Pullman car, and an M. & S.W.J.R. 4-wheel brake third. There is also an ex-L.M.S.R. test train, comprising a mobile testing unit, dynamometer car, and special tender, the prototype of which was used for track, gradient, and locomotive testing purposes.

British Railways Demonstration of Goods Handling and Rolling Stock

Exhibition of 20 types of standard wagon and demonstration of mechanical handling methods

Latest types of British Railways freight wagons, and examples of many devices which are being used to speed-up the handling of traffic in goods depots, were featured in a demonstration which was staged at Battersea Wharf Goods Depot, London, S.W.1, on September 17 and 18.

The demonstration was formally opened by Mr. Alan Lennox-Boyd, Minister of Transport, before an invited audience of civic and trading representatives; Mr. John Elliot, Chairman of the Railway Executive, presided at the opening ceremony. The demonstration was open free to the public between 1 p.m.-6 p.m. on Wednesday and 10 a.m.-4 p.m. on Thursday.

Mr. John Elliot, Chairman of the Railway Executive, speaking at the opening on Wednesday, said that railwaymen were non-political, but the Transport Bill would considerably affect the industry. This time, they hoped Parliament would get rid of some of the archaic charging enactments which were well over 100 years old, necessary, no doubt, when the railways had a monopoly, but completely out of line with modern conditions. Their disappearance would give the railways a real charter of freedom and enterprise.

Many railwaymen now serving had been through two major reorganisations—one in 1923 and one in 1948. Now they were about to experience another. Railway officers and their staffs were renowned for loyalty, self-discipline, and hard work, but major changes every decade or less were bad and unsettling. Most of the transport problems were not really political at all; they were technical, and above all, commercial. They had the right to ask that this time the changes should have a degree of permanence which would keep them out of political controversy and enable them to concentrate on their real job of providing better service to traders and the travelling public.

The rolling stock on view showed the determination of British Railways to cater for the requirements of every section of industry—and in a manner that would compare favourably with any other kind of transport. It was the outcome of the ideas and experience of railway officers both at Headquarters and in the Regions, and of their customers. Especially interesting was the new 24½-ton mineral wagon which would be the standard of the future. The B.R. freight rolling stock fleet totalled 1,122,000 vehicles, and conveyed 285 million tons a year, or 23,000 million ton-miles. The number of fast freight trains fitted with continuous brakes was now 44,000 a year, compared with 27,000 in 1938; and with the approval of the British Transport Commission the long-term policy of eventually fitting all their freight wagons with the continuous brake had been agreed. When they could achieve this it would be a great move forward. Tests were now under way to decide the type of continuous brake best suited to British traffic conditions.

Rolling Stock Exhibited

The range of 20 different types of wagons exhibited showed the progress made since nationalisation, when British Railways took over 1,200,000 wagons formerly owned by the railway companies, or by private firms. There were then no fewer than 480 different types in produc-

tion, and, despite the necessity to provide many special types for the needs of individual traffics, it is intended eventually to replace these 480 designs by not more than about 150. 65 types of British Railways standard freight wagons have already been produced.

Among the principal features of the exhibition were three new types of wagon, which were publicly shown for the first time—two coal-carrying wagons with capacities of 24½ tons (instead of the normal 13-16 tons), which will be the standard of the years to come, and a high capacity iron-ore wagon, which carries 27 tons; one of the coal wagons is hoppers for discharge between the rails and the other has four side doors and an end door. Each of these wagons weighs 35 tons loaded. 169 million tons of coal and coke and 14½ million tons of iron ore were conveyed by British Railways last year, and the introduction of higher capacity wagons for certain traffics is justified by the trend of development by coal, gas and electricity undertakings and the iron and steel industry.

Wagons for General Merchandise

It was emphasised that while these new wagons mark a considerable advance in capacity for these particular traffics, the size of wagons for general merchandise continues to be governed by the demands of trade, and for this reason the existing capacities of 12-tons for covered vans and 13-tons for open wagons are being retained. Apart from coal class traffic and iron ore, British Railways carried over 100 million tons of merchandise in 1951.

With the exception of a 16-ton mineral wagon built by the Birmingham Railway Carriage & Wagon Co. Ltd., the 20 types of wagons on show were built at the following British Railways workshops:—

24½-ton flat-bottom coal wagon	... Shildon
24½-ton hopper coal wagon	... Shildon
27-ton iron-ore tippler wagon	... Derby
20-ton freight train brake van	... Faverdale
8-ton banana van	... Faverdale
12-ton insulated fish van	... Faverdale
12-ton covered ventilated van	... Wolverton
8-ton cattle wagon	... Swindon
22-ton tube wagon	... Faverdale
12-ton container wagon	... Swindon
24-ton catalyst wagon	... Derby
13-ton soda ash wagon	... Shildon
20-ton bulk grain wagon	... Derby
13-ton shock absorbing wagon	... Derby
13-ton high goods wagon (wood) (with sheet supporter bar)	... Derby
13-ton high goods wagon (steel)	... Shildon
42-ton bogie bolster	... Lancing
42-ton plate wagon	... Shildon
25-ton lowmac (low machinery wagon)	... Shildon

Containers of 12 different types, for the conveyance of bicycles, frozen meat, furniture and special traffic, were also on show.

Visitors to the exhibition saw in operation many of the devices which British Railways are introducing on an increasing scale at goods stations to speed-up operations, and to reduce intermediate handling of goods traffic. These appliances included a wagon unloading machine, electric elevating platform trucks (including one adapted for moving railway drays and so making it unnecessary to employ a horse separately for this purpose), pallet trucks, a one-man shunting tractor, and a lorry-mounted crane.

Since January 1, 1948, British Railways have completed, or have begun, modernisation schemes at 100 goods stations, at the majority of which mechanical devices

of the types demonstrated are being used. During the same period, 60 goods stations have become redundant, and have been closed or converted to other purposes, due to concentration of traffic under unified railway working. As with the construction of new railway wagons, though, the rate at which goods depots can be converted or modernised is at present restricted by the limitations on steel supplies and capital investment.

Three locomotives were also on show. These were No. 70025, *Western Star*, one of the first of this year's series of the British Railways standard "Britannia" class built at Crewe; a class "4" standard tender engine No. 75019 built at Swindon and a 350 h.p. diesel-electric shunter No. 12120 built at Darlington.

CANADIAN RAILWAY RATE INCREASE.—A revision of freight rates, mainly upwards, on import and exports by Eastern Canadian ports is sought by the Canadian Pacific and Canadian National Railways. The object is to obtain greater revenue by adjusting Canadian rates to the higher charges of U.S.A. railways. The charges would apply on traffic through the ports of Halifax, St. John, Montreal, Quebec, Sorel, Three Rivers, and the U.S.A. Atlantic seaboard, and the rates would extend westward to Ontario and the Manitoba border. If the new rates are authorised, this will reduce proportionately the size of any future general rate increase. The proposed new scales would give Halifax and St. John a rate on a parity with the Atlantic ports in U.S.A. north of Baltimore.

PROPOSALS FOR SCANDINAVIA-SCOTLAND SHIPPING SERVICES.—Mr. W. A. Nicholson, Manager and Secretary of the Scottish Tourist Board, said recently that representatives of Danish and Swedish travel agencies were expected to come to Scotland shortly to explore the possibility of direct passenger transport between Denmark and Scotland. Mr. Nicholson said that from Denmark and Sweden alone there was a 200 per cent. increase of travellers to Scotland this year, and there was no doubt that a direct service is absolutely essential. Reports from Copenhagen have suggested a direct shipping route between Leith and Copenhagen, or Leith and Esbjerg, and a direct air route from Prestwick to Copenhagen.

ALDERSHOT & DISTRICT TRACTION CO. LTD.—Speaking of the petrol tax in his address at the annual general meeting of the Aldershot & District Traction Co. Ltd., Mr. W. T. James, Chairman of the company, said that its increase had resulted inevitably in increases in the fares charged to the public. The latest increase in tax would cost the company approximately £35,000 in a full year and the total tax of 2s. 6d. per gallon meant that they were paying no less than at the rate of £135,000 per annum to the State in taxation on fuel. In addition they paid heavy road fund licence duties on the buses and, as with other industries, the ordinary taxation on any profit which they made. This enormous and unprecedented burden of taxation on an essential public utility service should not be allowed to continue, and he hoped that the Government would realise that it must be reduced.

European Railway Co-operation

In his capacity as Vice-President of the International Union of Railways, Mr. John Elliot, Chairman of the Railway Executive, has written to *The Times* of September 11 on the subject of the results of co-operation between railway administrations in Europe. Referring to an article in that paper on plans in hand by various European Transport Ministers for co-ordination and pooling of railway resources, Mr. Elliot wrote:

"May I be permitted to add that the important work already done in this field, including the Société Nationale des Chemins de fer Français—Bundesbahn wagon pool and the new refrigerated wagon pool company ("Interfrigo"), has been very largely brought about by the Union Internationale des Chemins de fer (U.I.C.), the old-established co-ordinating body to which most of the world's railways belong (except those on the American continent). Under the energetic and enlightened leadership of my colleague, M. Louis Armand, Director-General of the S.N.C.F., supported by the distinguished directors-general of Italy, Belgium, Holland, Switzerland, Norway, and Sweden, among many others, rapid progress has been made since the war in developing standard specifications for railway equipment for national and international use, and important orders have already been placed.

"There is no better example in Europe today of practical and realistic co-operation than the U.I.C., backed by its specialised general secretariat in Paris, and its expert committees composed of railway officers drawn from the member administrations, which are today the mainspring behind the through freight and passenger train workings on the Continent and to and from Great Britain. In this work the various departments of British Railways have for long taken a prominent part."

Transport Reorganisation in Czechoslovakia

Railways in Czechoslovakia were formerly the responsibility of the Ministry of Transport. After the *coup d'état* of February, 1948, this Ministry was in the charge of M. Petr, and after his death M. Antonin Pospisil; the latter is still Minister of Transport, but the railways recently were divorced from the Ministry of Transport and placed under a newly instituted Ministry of Railways; the Minister of Railways is M. Josef Pospisil.

The "Czechoslovak State Railways National Undertaking" has been dissolved, and all its assets transferred to the Ministry of Railways; the latter is not responsible for trams or similar urban transport. The practice of each Ministry having a special section for Slovak affairs has not been followed in the new Ministry of Railways. The Ministry of Transport remains responsible for, *inter alia*, inland waterways, roads, air traffic, and tourism.

Railway Tasks and Achievements

M. Pospisil recently described the achievements and plans of the Czechoslovak railway administration. The new Ministry of Railways is expected to improve the working of transport generally. The railways, he said, are faced with enormous tasks. The freight tonnage carried at present is twice that carried in 1937. The needs of Czechoslovak industry will, in the coming year, call for a 30 per cent. increase over 1951 in the num-

ber of wagons needed, an indication of the expansion of the national economy.

In the last four years, he added, the Czechoslovak State Railways have placed hundreds of modern, highly efficient locomotives, dozens of railcars, and several thousands of up-to-date passenger and freight vehicles in service. The administration is planning an extensive modernisation of operating methods and widespread electrification.

Cross-Channel Services

Mr. C. Grasemann, formerly Chief Public Relations & Advertising Officer, British Railways, Southern Region, gave on September 16 a lecture "Travel to the Continent," the first of a series on railway subject arranged by the National Book League in connection with its current "Railroadiana" exhibition at 7, Albemarle Street, London, W.1.

Outlining the problems of passenger traffic to and from the Continent by train and Channel packet, Mr. Grasemann discussed the economic capacity of ships and the choice of ports, which latter, he said, might involve political and strategic considerations. He stressed the part played by the railways in developing and in equipping their ships with new devices such as depthfinders, radar, and stabilisers.

The luxury and comprehensive services offered by Channel packets, and the safety regulations, Mr. Grasemann explained, necessitated a ship's crew proportionately much larger than that of a train; thus the crew of the *Isle of Thanet* numbered 85. The planning and observance of schedules were of the utmost importance in services to the Continent.

The problem of boat train arrangements was eased by the use of wireless advices of the complement of incoming ships, and by the seat reservation system. The latter, said Mr. Grasemann, had been invented in France, and he himself had had the duty of first applying it to S.E.C.R. boat trains after the 1914-18 war.

The comfort and amenities of the "Golden Arrow" and "Night Ferry" were mentioned by Mr. Grasemann; one advantage of the latter was the full night's rest which it afforded between London and Paris.

Importance of Services to the Continent

The fact that British Railways Continental services last summer had conveyed record numbers of passengers showed the importance of cross-Channel services. It had not always been realised that in the number of passengers handled Dover had been the premier port of Britain. Ownership of ships, docks, and hotels had helped the railway companies to develop their marine services; since nationalisation some of these ancillaries had been taken out of the railways' control.

Mr. R. E. Sinfield, Continental Superintendent, Southern Region, pointed out in the ensuing discussion that the packet ports still were the responsibility of the Railway Executive. The French and other Continental railwaymen with whom they dealt had the same basic aims as they themselves; they were all *cheminots*, and relations were cordial.

British Railways, Mr. Sinfield added, recognised the importance of motorcar traffic, for which the *Lord Warden* had been built, with direct drive for motor cars on and off.

Whilst the "Night Ferry" catered chiefly for London-Paris business traffic, it might be possible next summer to

arrange through coaches between London and other places by the Dover/Dunkirk ferry. If the British railways had been late in developing sea-going train ferries compared, say, with those of the Scandinavian countries in the Baltic or Italy over the Straits of Messina, this was largely because of the problem presented by the Channel tides.

Works Programme in Western Germany

The German Federal Railways have authority to spend D.M. 200 million under the 1952 new works programme, which is more than was sanctioned in 1951. The current programme includes 500 major works costing D.M. 100,000 or more, but falls far short of requirements.

About 100 major works concern bridges, the principal item being the replacement of temporary by permanent structures. Of particular importance is the final reconstruction of the three Rhine bridges at Cologne (Hohenzollernbrücke), Enger-Urmitz (on the Koblenz-Neuweid line), and Mainz-Wiesbaden (Kaiserbrücke). Whilst permanent rehabilitation of two tracks of the Hohenzollernbrücke is nearing completion, that of the Kaiserbrücke, where many incidental works are involved, will take some years.

Some 65 major works are concerned with locomotive sheds and workshops; in their reconstruction, the possibility of future electrification is kept in mind.

Although war damage to tunnels has now been largely made good, there is much general deterioration of tunnels, many of which are more than 60 years old.

Some 50 works under the current programme are concerned with modernisation of signalling. At Cologne, for example, the control of four stations is now being concentrated at a single control post. Similarly, the new central signal cabin at Frankfurt-Niederrad will improve working through the Main bridge bottleneck. At other important stations such as Essen, Hamburg-Altona, Hanover, Cassel, and Mannheim, modern signal boxes take the place of two to four older cabins.

Station Buildings Restored

The restoration of station buildings, which is lower in the priority list, is being speeded up by means of special credits to the Federal Railways made available for the purpose by provincial Governments or local authorities. The repair of badly damaged station roofs such as Cologne, is also progressing.

The programme also includes the reconstruction of a number of goods depots, some of considerable importance, as at Hanover and Heilbronn where modern methods of mechanical handling are being tried.

It has been found necessary to include, in the programme, erection of railway administration buildings. The former Wehrmacht barracks which afforded temporary accommodation in lieu of destroyed railway offices will have to be handed back to the revived German Army. Other new works include an important new marshalling yard at Gremberg, and ferry berths at Grossenbrode for the traffic with Denmark.

In the field of electrification, preparatory works have been commenced for the extension of electric traction to the section Nuremberg-Würzburg-Aschaffenburg.

Portuguese Transport Development

The Portuguese Government has announced a development plan to be carried out during the next six years, both in continental Portugal and in the overseas territories, and providing for a total investment of 13,500 million escudos, of which 7,500 million will be allocated to Portugal itself and 6,000 million to the different colonies and overseas territories in Africa, India and the Far East. The plan is to be submitted to the National Assembly for approval.

In Portugal itself, under the heading "transport and communications," a total of 2,540 million escudos is to be spent on port facilities, railways, airports, merchant marine, civil aviation, postal services and telephones.

In Angola, the Loanda State Railway is to be extended 97 km. in the direction of the Belgian Congo. The Mossamedes Railway is also to be extended, in the direction of Southern Rhodesia; the plan contains an allocation of 950 million escudos for the construction of an additional 600 km. of track, a bridge over the Cunene, and for purchase of rolling stock and equipment.

Developments in Mozambique

The plan provides for important railway extensions in Mozambique, most important of which is the Limpopo Railway extension, from the Limpopo River to the Southern Rhodesian border. This railway is then to be continued by the Southern Rhodesian Government, from the frontier to Bannockburn, connecting the Rhodesia Railways with Lourenço Marques. There will be another extension of the Lourenço Marques system, from Vila Luisa to Manhica and the Tete Railway will be carried on to Furancungo. In addition, an extension of 184 km. is envisaged for the Mozambique Railway. The total amount of the railway investments in Mozambique will be 971 million escudos.

Staff & Labour Matters

Engineering Wage Claim

At a meeting in York on September 10, the executives of the 38 unions affiliated to the Confederation of Shipbuilding & Engineering Unions decided by a large majority to instruct their members to ban overtime and restrict piecework throughout the country. This action was taken in protest against the rejection of wage claims by the Engineering Employers' Federation and the Shipbuilding Employers' Federation respectively. The date of the operation of the ban was left for decision by the Confederation executive.

A suggestion that the dispute be referred to arbitration, which had the support of the National Union of General & Municipal Workers, was rejected, as was also a suggestion for a strike ballot.

The President of the C.S.E.U., Mr. H. G. Brotherton, said after the meeting that the Minister of Labour, Sir Walter Monckton, would be informed immediately of the decision. It would be left to each union to decide how to enforce the ban.

Meeting at Ministry of Labour

In an attempt to avert a crisis, the Ministry of Labour intervened; Sir Robert Gould, Chief Industrial Commissioner, sent a telegram to Mr. Gavin Martin, Secretary of the Confederation, inviting

union representatives to attend at the Ministry for talks on September 15. The Confederation accepted the invitation and agreed to postpone until after the meeting its decision on the date from which the ban on overtime and piecework would be imposed.

A statement after the meeting on September 15 said that there had been a full explanatory talk at which the C.S.E.U. executive explained its present attitude in the light of the discussions it had had with the employers.

After Sir Robert Gould and other officers of the Ministry had discussed the matter with union leaders on Monday, invitations were issued to employers in the engineering and shipbuilding industries. Representatives of the Engineering & Allied Employers' National Federation arranged to meet officers of the Ministry on September 18, and those of the Shipbuilding Employers' Federation will meet officers of the Ministry next week.

A special delegate conference of the Amalgamated Union of Foundry Workers passed a resolution on September 16 affirming its support for the wage policy of the C.S.E.U.

Contracts & Tenders

The Crown Agents for the Colonies have placed a contract with the Gloucester Railway Carriage & Wagon Co. Ltd. for three bogie first, second and third class composite coaches and for two bogie first, second and third class composite coaches, with the first and second class convertible. The coaches are for the Ceylon Government Railway.

The order for 480 four-wheel covered goods wagons for the East African Railways & Harbours, which, as recorded in our August 8 issue, has been placed with the Gloucester Railway Carriage & Wagon Co. Ltd. by the Crown Agents for the Colonies, has recently been increased to 520.

The New Zealand Government has approved the placing of orders for additional modern equipment for the railways at a cost of more than £500,000. It is proposed to order 25 diesel-mechanical shunting locomotives of 200 h.p. and orders have been approved for six power-driven adzing machines for re-surfacing sleepers and for six power-operated jacks for lifting the track during ballasting operations.

The Board of Trade, Special Register Information Service, recently reported that a call for tenders had been issued by the Directorate General of Supplies & Disposals, Government of India, for the supply of: 180,155 mild-steel tie-bars (long) (broad-gauge) for "CST9" type cast-iron plate sleepers for 90 lb. flat-bottom rail, and for 4,576 mild-steel tie-bars (broad-gauge) for cast-iron duplex sleepers for 90 lb. flat-bottom rail.

Tenders should reach the Office of the Director General of Supplies & Disposals, New Delhi, by 4 p.m. on September 28. A copy of the tender documents is available for inspection at the Board of Trade, Commercial Relations & Exports Department, by representatives of United Kingdom manufacturers. A further copy is available on loan in order of written application; reference CRE/30735/52 should be quoted. The drawings and specification are not held at the Board of Trade.

The United Kingdom Trade Commissioner at Johannesburg has notified the Board of Trade, Commercial Relations & Exports Department, of a call for tenders issued by the South African Railways for the supply of 46,600 heel and crossing bolts of various sizes, fitted with locknuts of Evertite, Ibbotson, or similar design.

Tenders should reach the Chairman of the Tender Board, Johannesburg, by 9 a.m. on Thursday, October 2. A copy of the tender documents, together with the S.A.R. specification for railway fishbolts and crossing bolts, was available for inspection at the Board of Trade by representatives of United Kingdom manufacturers, until September 18. After this date they have been available on loan in order of written application; reference CRE/30550/52 should be quoted.

Notes and News

Draughtsman Required.—The Gloucester Railway Carriage & Wagon Co. Ltd., Gloucester, have vacancies for draughtsmen. See Official Notices on page 335.

Vacancy for Traction Sales Engineer.—Applications are invited for the post of traction sales engineer required by diesel engine manufacturers. See Official Notices on page 335.

Vacancy for Draughtsman.—Applications are invited for the post of draughtsman required by an East Midland firm of railway permanent way manufacturers. See Official Notices on page 335.

Vacancy for a Technical Instructor.—Applications are invited for the post of technical instructor required by the Nigerian Government Railway for one tour of 18 to 24 months in the first instance. See Official Notices on page 335.

Vacancy in a South Wales Wagon Building Company.—Applications are invited for the post of assistant to the works management required by wagon building and engineering company in South Wales. See Official Notices on page 335.

Crown Agents for the Colonies.—Applications are invited for posts of accountants required by the Government of the Federation of Malaya for the railway department for one tour of three years with prospect of pensionable employment. See Official Notices on page 335.

Locally-Built Equipment for New Zealand Government Railways.—Mr. W. S. Goosman, New Zealand Minister of Railways, has announced that his Government is to spend over £500,000 on construction in New Zealand of 35 locomotives and some 1,000 wagons for the New Zealand Government Railways. Five locomotives, he states, and about 400 wagons are due to be completed this year.

Kandla-Deesa Line to be Opened.—An agency message from Bombay states that the first step towards the opening of the new port in India on the West Coast of India, at Kandla, is due to be taken on October 1 when the new 170-mile line from Deesa, on the Central Railway, India, will be inaugurated. The distance between Kandla, which is in the Gulf of Cutch, and Karachi, in Pakistan, by sea is 260 miles and by land route 800 miles. The line provides a link between the centrally-governed State of Cutch and the rest of

India, including Rajputana, Central India, East Punjab and Delhi. Kandla is seven miles from Gandhidham, where the new railway line will terminate for the present. Kandla port is expected to be completed by the end of 1955, after which the railway will be extended to it.

Mother and Child Excursions.—On August 23 two special trains were run by the North Eastern Region from Washington, Co. Durham, to South Shields, and two from North Shields and Percy Main to Morpeth, carrying 550 mothers and 846 children over three years of age at a fare of 1s. 8d. for adults and 10d. for each child. On arrival, each child was given 2s. spending money from the Club Funds of the Percy Main Social Club.

Special Trains for Blackpool Illuminations.—To convey nearly 50,000 people to see the illuminations at Blackpool this weekend, the London Midland Region is running 100 special day, half-day and evening excursion trains to the Lancashire resort on Saturday and Sunday, September 20 and 21. This is the biggest weekend programme of special trains to the Blackpool illuminations ever operated.

Goods Vehicles Inquiry.—Reference was made in last week's issue to the goods vehicles inquiry to be conducted by the Ministry of Transport next week; it was stated that operators of vehicles would be required to notify the Ministry of, *inter alia*, the "amount of fuel used." The words quoted should have read "type of fuel used."

Institute of Transport Luncheon to Technical Press.—Mr. A. B. B. Valentine on September 12 entertained members of the technical press to luncheon at the Institute of Transport headquarters, 80, Portland Place, London, W.1, in recognition of their help and interest during his year of office as President. Mr. Peter Duff, Editor, *The Shipping World*, replied on behalf of the press to Mr. Valentine's speech of welcome. Those who attended the luncheon were:—

Institute of Transport: Mr. J. W. S. Branner (Vice-President); Messrs. J. Benstead, R. W. Birch, A. G. Course, H. C. Crane, H. H. Crow,

M. F. Horner, Major R. H. Mayo, Messrs. A. C. B. Pickford, G. H. Searle, Alex. J. Webb (Members of Council). Messrs. D. R. Lamb, J. S. Nicholl, T. W. Royle, J. S. Wells (Past Presidents); Mr. A. L. Castleman, Hon. Treasurer; Mr. F. W. Crews (Secretary), Mr. H. C. Tree (Assistant Secretary); Mr. W. H. Stebbings (Examinations Officer).

Technical Press: Messrs. W. A. Babington, *Lloyd's List & Shipping Gazette*; R. Blackburn, *Flight*; B. K. Cooper, *The Railway Gazette*; K. R. Doggett, *The Dock & Harbour Authority*; Peter Duff, *The Shipping World*; A. G. Evershed, *The Financial Times*; C. F. Haywood, *Motor Transport*; C. Hope Johnston, *Journal of Commerce*; G. W. P. McLachlan, *The Syren & Shipping Illustrated*; A. F. Mann, *Transport World*; A. F. Moseley, *Passenger Transport*; J. E. Parke, *Modern Transport*; Walter G. Sharp, *The World's Carriers*; A. E. Sherlock-Mesher, *The Commercial Motor*; H. A. Taylor, *The Aeroplane*; John P. Taylor, *Shipbuilding & Shipping Record*; W. G. Tilling, *The Locomotive*; W. H. Wendon, *Fairplay*.

I.R.C.A. Permanent Commission.—The name of Mr. H. E. Stokke, General Manager of the Norwegian State Railways, was omitted in error from the abridged list in last week's issue of principal delegates to the Enlarged Meeting in Stockholm of the Permanent Commission of the International Railway Congress Association.

August Pig Iron and Steel Production.—The output of steel ingots and castings in August was at an annual rate of 14,535,000 tons, compared with a rate of 14,236,000 tons in the previous month and of 13,855,000 tons in August, 1951. Pig iron production was at an annual rate of 10,498,000 tons, against a rate of 10,482,000 tons in July and of 9,409,000 tons in August last year.

Improvements at Goole Docks.—Mr. S. A. Finnis, Chief Docks Manager of the Humber Ports, has announced that approval has been given to a scheme of reconstruction for two entrance locks at Goole Docks at an estimated cost of £80,000. In the first instance the Ouse Lock, which was closed in 1938, will be repaired and reopened for traffic so that the Victoria Lock can be put out of use

for a thorough overhaul and reconstruction which will take about a year. The Ouse Lock was last overhauled in 1901 and the Victoria Lock in 1915. When the Victoria Lock is again in use, shipping will revert from the Ouse Lock to the Victoria Lock, but the former will be retained in readiness for use in emergency. The other lock principally used by shipping, namely the Ocean Lock, will continue in use.

Lectures on Railway Subjects.—Mr. L. C. Johnson, whose name was given in last week's issue as a lecturer on railway archives at the National Book League on October 14, is Archivist and not, as described through a printer's error, Architect, to the British Transport Commission.

A.E.I. Interim Dividend.—The Directors of Associated Electrical Industries Limited announce the payment on October 16 of an interim dividend of 7½ per cent., less tax, on the ordinary stock on account of the year 1952, to the stockholders registered on the books of the company on September 25, 1952.

Light Railway Transport League.—A visit to the Swansea & Mumbles Railway is being arranged by the Light Railway Transport League for Sunday, September 28. The party will travel by special Western Region diesel railcar, leaving Paddington at 8.30 a.m., and the inclusive fare will be 52s. Applications for inclusion in the party should be made to Mr. F. W. Hunt, 71, Princes Avenue, Palmers Green, London, N.13.

Tourist Traffic to Ireland.—The number of travellers to the Republic of Ireland during the first six months of 1952 was some 862,000, against 949,000 in the corresponding period of 1951. *The Irish Times* points out that these figures may mislead, as some visitors to Ireland spend the greater part of their holidays in Northern Ireland with only a brief visit to the Republic. There is evidence that influx of tourists in July and August may bring receipts from tourism up to the 1951 figure.

Tilbury-Gravesend Ferry Rates and Charges.—The Eastern Region announces that commencing October 1, adjustments will be made to the ferry charges made for the conveyance of commercial vehicles on the Tilbury-Gravesend Ferry, as follows:—

Motor or steam lorry or commercial vans	Single		Return	
	s.	d.	s.	d.
Under 2 tons	6	0	9	0
2 tons-4 tons	8	0	12	0
4 tons-8 tons	12	0	18	0
8 tons-12 tons	18	0	27	0

American Car & Foundry Company.—The largest representation of shareholders in 50 years (over 83 per cent.) was recorded at the annual meeting of the American Car & Foundry Company held at Flemington, N.J., on August 28. The motion to convert the common shares from no-par to \$25 par value and to increase the authorised number of common shares from 600,000 to 1,000,000 was carried. Mr. John E. Rovinsky, Chairman of the Company, said that while the steel strike had naturally reduced expectations, the net result for the first six months ought to be quite satisfactory under all the circumstances. He declined to make any estimate for the second half of the fiscal year, stating that there were too many unforeseeable circumstances the effect of which

British Railways Entry in Preston Guild Procession



Scale model of Northern Union Railway coach, built for Preston Guild show of 1842, in London Midland Region display in Guild procession on September 3, 1952

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

CROWN AGENTS FOR THE COLONIES

TECHNICAL INSTRUCTOR required by the Nigerian Government Railway for one tour of 18-24 months in the first instance. Commencing salary at the appropriate point in scale (including gratuity pay) £864 rising to £1,392 a year. Outfit allowance £60. Liberal leave on full salary. Gratuity of between £100 and £150 a year payable on satisfactory completion of final service. Free passages for the officer and his wife and assistance towards the cost of children's passages or their maintenance in this country. Candidates must have served an apprenticeship as a Fitter and Turner with British Railways or a firm of Locomotive Builders and have had at least 3 years' subsequent experience in a Locomotive Drawing Office and in up to date workshop practice. They should hold a National Certificate or equivalent qualification covering Mathematics, Heat Engines, Machine Drawing and Mechanics and have had some teaching experience. Apply at once by letter stating age, full names in block letters, and full particulars of qualifications and experience and mentioning this paper to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting on letter M.25636.A. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

DRAUGHTSMAN required by East Midland Firm of Railway Permanent Way Manufacturers. Experience in British Standard and Private Sidings practice, Site Surveys, etc., required. Only those with P.W. experience need apply. Superannuation Scheme, 5-Day Week, Canteen, etc. Write stating age, experience, salary required to Box 603, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

BOUND VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

could not be forecast with precision. He stated, however, that the company had orders worth about \$413 million on its books, of which approximately two-thirds was defence work and one-third regular work.

Coal, Iron and Steel Carriages by British Railways.—British Railways conveyed 219,697 tons of iron and steel during the week ended September 6, the second highest total for over 18 months. Rail forwardings of opencast and deep-mined coal during the week ended 6 a.m. on Monday, September 15, amounted to 3,086,300 tons, compared with 3,077,760 tons the previous week.

Late Season Expresses, N.E. Region.—Numerous additional services are being run this month and in early October by the N.E. region to cater for late holiday-makers returning home after the end of the summer timetables. Most of these are at weekends, but certain additional trains are running daily on the Leeds-Scarborough, Normanton-Scarborough, Darlington-Scarborough, Middlesbrough-West Hartlepool, and Stockton-Whitby routes.

New David Brown Company in Australia.—The David Brown Group of companies announces the formation of a new company, David Brown (Australasia) Proprietary Limited. With headquarters at 82, Pitt Street, Sydney, Australia, the new company will be responsible for import and distribution throughout Australasia of the various products of David Brown Tractors (Engineering) Limited, of Meltham, Yorkshire, namely agricultural tractors and implements, industrial tractors, stationary engines, and marine engines. Mr. P. J. Clifford, former Export Sales Manager at Meltham, who went out to Australia a

CROWN AGENTS FOR THE COLONIES

ACCOUNTANTS required by the Government of the Federation of Malaya for the Railway Department for one tour of three years with prospect of pensionable employment. Salary (including allowances) payable in local currency equivalent at present Government rate of exchange to £1,218 a year rising to £2,100 a year for single men. Additional allowance up to £630 a year payable to married men according to number of dependents. Commencing salary according to age, war service and experience. Free passages. Liberal leave on full salary. Candidates should have had extensive training and experience in a railway accounts department and must possess a knowledge of budgetary control, revenue and expenditure accounts, returns and statistics and mechanised accounting. To be eligible for the above salary scale candidates should be members of one of the recognised bodies of professional accountants or Associate Members of the Institute of Transport or hold an academic degree. Those who are not so qualified would be eligible for salary in a somewhat lower scale, i.e., equivalent to £1,197 a year rising to £1,862 a year exclusive of dependents' allowances. Apply at once by letter, stating age, full names in block letters, and full particulars of qualifications and experience, and mentioning this paper to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting on letter M.27923.E. Applicants now serving with British Railways would be eligible for secondment and should apply through their local officers. The Crown Agents cannot undertake to acknowledge all applications and will communicate only with applicants selected for further consideration.

NORTH BRITISH LOCOMOTIVE CO., LTD. offer engineering experience to University graduates, and to holders of the Diploma of a Technical College. Students accepted for University or R.T.C. training are also offered practical experience concurrently with academic studies. Further details from—PERSONNEL MANAGER, 110, FLEMINGTON STREET, GLASGOW, N.

RAILWAY MAINTENANCE PROBLEMS. By H. A. Hull (late District Engineer, L.M.S.R.). Valuable information. With much sound advice upon the upkeep of permanent way. Cloth, 84 in. by 51 in. 82 pp. Diagrams. 5s. By post 5s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

year ago, has been appointed Manager of the new company. This is the third new David Brown company which has been established in Commonwealth countries since the war. The other companies are in South Africa and Canada.

Russia to Return Railway to China.—It is announced from Moscow that Russia will hand over without payment the Changchun Railway, Manchuria, to China by the end of the year.

Trans-Zambesia Railway Co. Ltd.—The Chairman of the Trans-Zambesia Railway Co. Ltd., Mr. Vivian L. Oury, presided at the annual meeting of the company on September 4. The report, summarised in our issue of August 22, and accounts were adopted.

Goods Wagons for Hong Kong.—We are informed that the brake equipment fitted to the goods rolling stock for the Kowloon-Canton Railway, described and illustrated in our issue of August 29, was supplied by the Westinghouse Brake & Signal Co. Ltd.

London Midland Region Cricket Cup Winners.—The final of the London Midland Region Cricket Challenge Cup Competition was played at Derby on September 6 between Crewe Signal & Telegraph C.C. and Northampton (L.M.R.) Sports Club. An excellent game resulted in Crewe winning by 138 runs to 87. Mr. J. W. Watkins, Chief Regional Officer, presented the Sir Frederick Harrison Cup to the winners and the Officers' Cup to the runners-up.

Crane Modernisation Scheme at Hull.—The Docks & Inland Waterways Executive announces that, with the approval of the British Transport Commission, a modern crane system is to be installed at the

SENIOR TECHNICAL ASSISTANT required for Railway Civil Engineer's Office in London. Applicants should have considerable experience in general permanent way lay-out schemes, taking off quantities, making of estimates of whole schemes including all ancillary works and buildings. Salary range £760/800. Permanency to suitable applicant with membership of Superannuation Fund after a probationary period. Free residential rail travelling facilities within specified limits immediately on appointment, other reduced and free rail travelling facilities after qualifying period of service. Five-day week and canteen facilities. Applications giving full particulars in regard to training, qualifications and experience should be addressed to—CIVIL ENGINEER, EASTERN REGION, BRITISH RAILWAYS, King's Cross Station, London, N.1.

WANTED—Early North Midland Railway and Midland Railway publications. Write in first instance stating title and year to A. J. TURNER, 56, Boulton Lane, Alvaston, Derby.

DIESEL Engine Manufacturers require Traction Sales Engineer. First Class Railway experience and connections essential. State age and positions held with dates when applying. Box 598, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

ASSISTANT to the Works Management required by Wagon Building and Engineering Company in South Wales. Applicants should be under 40 years of age and have a theoretical and practical knowledge of the trade. Accommodation available. Apply giving details of experience, etc., together with salary required to Box 600, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

DRAUGHTSMEN required by Gloucester Railway Carriage & Wagon Company, Gloucester, preferably with Steel Car or Diesel Car experience. 5-day week. Pension Scheme in operation. Apply LOCAL MINISTRY OF LABOUR AND NATIONAL SERVICE.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

King George Dock, Hull, the largest dock on the Humber, at an estimated cost of £950,000. On account of age and design much of the existing equipment is now obsolescent and under the scheme this will be replaced by 45 6-ton electric cranes. The proposals include a changeover from d.c. to a.c. supply. The resulting improved operating efficiency will facilitate the turn-round of shipping at a dock which is used extensively by vessels trading with Commonwealth countries and the Americas.

Closing of St. Dunstan's Passenger Station, N.E. Region.—As the passenger service at St. Dunstan's Station, N.E. Region, near Bradford, was being operated at a considerable loss, it has been withdrawn as from September 15. A frequent alternative bus service for passengers is operated by the Bradford Corporation from a stop close to the station. Parcels traffic is being dealt with at Bradford Exchange Station.

White Pass & Yukon Results.—In the quarter ended June 30 the gross revenue of the White Pass & Yukon Railway Corporation Limited was \$961,821, compared with the figure of \$949,979 a year ago. Net earnings were lower, however, at \$150,992, against \$172,196. There is an increase of \$151,383 in net earnings for the first six months of the current year, which stand at \$327,852, and gross earnings at \$1,825,973.

Servo Warning Devices on Motor Vehicles.—The Ministry of Transport draws attention to the requirement that motor vehicles registered on or after October 1, 1937, and fitted with a servo braking system should be provided with a warning device to indicate to the driver any impending failure or deficiency in the vacuum or pressure system. Instances have come to light of devices without any form of illumination

or means of making them readily visible to drivers at night. In these circumstances the Minister thinks it desirable to emphasise the practical need for ensuring that the warning device is fully effective by night as well as day.

Legal Compulsion to Raise Armrests.—

The question whether there is any legal compulsion on passengers to raise armrests in compartments in crowded trains, so that four instead of three passengers can sit each side, has been discussed at a Press conference of the Transport Users' Consultative Committee (North Western Area). The Press has been asked to help in an appeal to passengers to raise the armrests. Those who reserve third class seats are already handed printed slips asking them to do this. Mr. W. D. Broadbent, the acting chairman, stated his opinion that a first class passenger did not exist in law; there was no mention of him in any Statute.

Forthcoming Meetings

September 20 (Sat.).—Permanent Way Institution, Leeds Section. Visit to underground works at Rothwell Colliery, at 9 a.m.

September 24 (Wed.).—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, S.W.1, at 5.30 p.m. Presidential Address, by Mr. C. M. Cock.

September 24 (Wed.).—East Indian Railway Officers' Association, 1952 Dinner, at the Connaught Rooms, Great Queen Street, W.C.2, at 6.30 for 7 p.m. Chairman, Mr. G. A. R. Trimming.

September 25 (Thu.).—Engineers' Guild, Metropolitan Branch, at Caxton Hall, Caxton Street, S.W.1, at 6 p.m. Annual general meeting.

September 25 (Thu.).—East Indian Railway Officers' Association, Annual Reunion Tea Party, at St. Ermins Hotel, Caxton Street, S.W.1, at 3.30 p.m.

September 25 (Thu.).—Permanent Way Institution, Manchester & Liverpool Section, at the Blackburn Conservative Union Association, 20, Lord Street West, Blackburn, at 6.45 p.m. "My Visit to America," by Mr. A. Dean, Civil Engineer, North Eastern Region, British Railways.

September 26 (Fri.) to September 29 (Mon.).—Course on "Transport and the Public," at Ashridge College, Berkhamsted, Herts., in conjunction with the Institute of Transport.

September 27 (Sat.).—British Railways, Southern Region, Lecture & Debating Society. Visit to Southampton Docks, leaving Waterloo at 8.30 a.m.

September 27 (Sat.).—Permanent Way Institution, London Section. Visit of Irish Section members, including a joint meeting at the Railway Executive Headquarters, 222, Marylebone Road, N.W.1, at 2 p.m. "Permanent Way Practice in France and Germany," by Mr. P. T. Somerville-Large, Vice-Chairman, Irish Section.

September 29 (Mon.).—Historical Model Railway Society, at the Headquarters of the Stephenson Locomotive Society, 32, Russell Road, W.14, at 7 p.m. "The Tallylyn Railway," by Mr. T. W. Robertson.

Until October 4 (Sat.).—International Machine Tool Exhibition, at Olympia, W.14.

Railway Stock Market

Although the beginning of the new Stock Exchange account brought some improvement in business, stock markets generally have been cautious with buyers favouring British Funds as a safety-first selection pending a clearer industrial outlook. The view continues to prevail that gilt-edged stocks are likely to show further good appreciation in price during the next few months, because important measures to strengthen sterling and gold and dollar reserves are inevitable, which is bound to enhance the investment merits of British Funds. Industrials have been overshadowed, as we go to press, by the tendency to await the decision of the engineering unions on overtime working; and with buyers holding off for the time being, small irregular price movements have ruled in most sections. Nevertheless, many industrial shares still offer quite reasonable yields. The shadow of E.P.L., however, is affecting sentiment, because this new tax severely limits the scope for higher dividends, which restricts interest in stock markets.

Among points discussed in the gilt-edged market is the fact that the £60,000,000 of Transport Commission one-year stock placed with the National Debt Commissioners last year will mature next December, when there may be a conversion offer with, perhaps, a public issue of new stock as well, though the latter would depend on the general position then ruling in the gilt-edged market.

Industrial shares are attracting only moderate attention, partly because it is realised that profits generally are now running well below the level of a year ago, and that reductions in some dividends are inevitable. On the other hand, the latter may already be discounted in share prices. Many companies are believed to have good prospects of keeping dividends at last year's rate, and on this basis current yields generally do not seem unattractive, bearing in mind that, if the rise in British Funds continues, it will mean a general decline in the future yield structure of markets.

There was not much business passing in foreign rails. Recent political developments in Chile have resulted in an easier trend in Antofagasta stocks, with the ordinary at 1½ and the preference 55, though the 5 per cent. (Bolivia) debentures seemed to be attracting some attention in view of the apparently generous yield and changed hands around 74.

Manila Railway debentures came in for profit-taking by speculators who purchased before the recent improvement in price and do not feel disposed to await the expected settlement in respect of the company's holding of Manila Railroad bonds, which may not come along for some months yet. Manila "A" debentures were 81, the 5 per cent. preference shares 9s, and the ordinary shares marked 2s. 9d.

After their recent fall, United of Havana stocks attracted buyers and the 5 per cent. (1906) debentures have strengthened to 16 at the time of going to press.

Taltal shares remained at 15s. and Nitrate Rails at 19s. Brazil Rail bonds were 6½, Mexican Central "A" debentures eased to 71, and National of Mexico "A" were \$43.

Activity continued in White Pass & Yukon common shares around \$19½, and in the 5 per cent. convertible debentures around 71, while the 24½ per cent. first debentures were 30½. Algoma Central & Hudson's Bay 5 per cent. first debentures changed hands around \$256.

Nyasaland Railways 3½ per cent. debentures marked 72. Guayaquil & Quito 5 per cent. first bonds changed hands at 28. Canadian Pacifics at \$61½ have been easier, with the 4 per cent. preference at 65 and the 4 per cent. debentures at 80½.

Among locomotive builders and engineers the feature has been a rise in Beyer Peacock to 30s. 6d., the good yield attracting buyers. Hurst Nelson were 49s. 6d., North British Locomotive 15s. 3d. and Birmingham Carriage 32s. 9d. Gloucester Wagon 10s. shares were 12s. 9d., Vulcan Foundry 23s., while Wagon Repairs 5s. shares were 12s. 3d. and Charles Roberts 5s. shares 21s. 9d.

RECORD ORDERS FOR MOTOR RAIL LIMITED.

—Mr. J. D. Abbott, Chairman of Motor Rail Limited, has pointed out in his statement circulated with the report and accounts, that despite scarcity of steel and other essential commodities, the company could maintain as great a volume of production as last year, while turnover in value increased. The demand for Motor Rail products continues to increase, and the order book stands at an all-time record, with a high percentage of export orders. The directors' recommendation of a dividend at 10 per cent., less tax (as last year), was adopted at the annual general meeting on September 10.

Traffic Table of Overseas and Foreign Railways

Railway	Miles open	Week, or month ended	Traffics for week				No. of week	Aggregate traffics to date		
			This year	Inc. or dec. compared with 1950/51	Total	Increase or decrease				
								1951/52		
South & Cen. America	Antofagasta ...	800	5.9.52	£ 163,700	+	£ 67,310	36	5,445,640	+	1,200,380
	Costa Rica ...	281	July, 1952	cl.463,149	+	cl.190,299	4	cl.463,149	+	cl.190,299
	Dorada ...	70	July, 1952	35,813	—	1,898	30	235,527	—	15,944
	Inter. Ctl. Amer. ...	794	July, 1952	\$1,032,978	—	\$15,127	30	\$7,977,146	—	\$2,610
	Paraguay Cent. ...	274	5.9.52	G693,322	+	G325,433	9	G5,368,282	+	G2,002,677
	Peru Corp. ...	1,050	Aug., 1952	\$9,656,000	+	\$997,000	9	\$19,162,000	+	\$2,578,000
	“(Bolivian Section)”	66	Aug., 1952	Bs.15,591,000	+	Bs.1,629,000	9	Bs.31,978,000	+	Bs.4,987,000
	Salvador ...	100	May, 1952	cl.53,000	+	cl.15,000	48	cl.899,000	+	cl.32,000
	Taltal ...	122	Aug., 1952	\$2,927,000	+	\$862,000	9	\$5,187,000	+	\$1,332,000
	Canada	Canadian National†	23,473	July, 1952	18,575,000	+	893,333	30	128,910,000	+
Canadian Pacific†		17,037	July, 1952	13,064,000	+	1,132,000	30	87,106,000	+	6,182,000
Various	Barsi Light* ...	167	July, 1952	44,155	—	11,670	17	124,140	—	29,610
	Gold Coast ...	536	July, 1952	260,241	+	5,354	17	1,179,541	+	119,405
	Mid. of W. Australia ...	277	June, 1952	52,966	+	9,338	52	690,910	+	193,202
	South Africa ...	13,398	16.8.52	1,973,780	+	75,344	20	39,005,131	+	1,644,282
	Victoria ...	4,744	May, 1952	2,183,278	+	229,476	48	—	—	—

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at \$3 to £1